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Well-known book author and translator **Huang Chaogui 黄朝贵**.

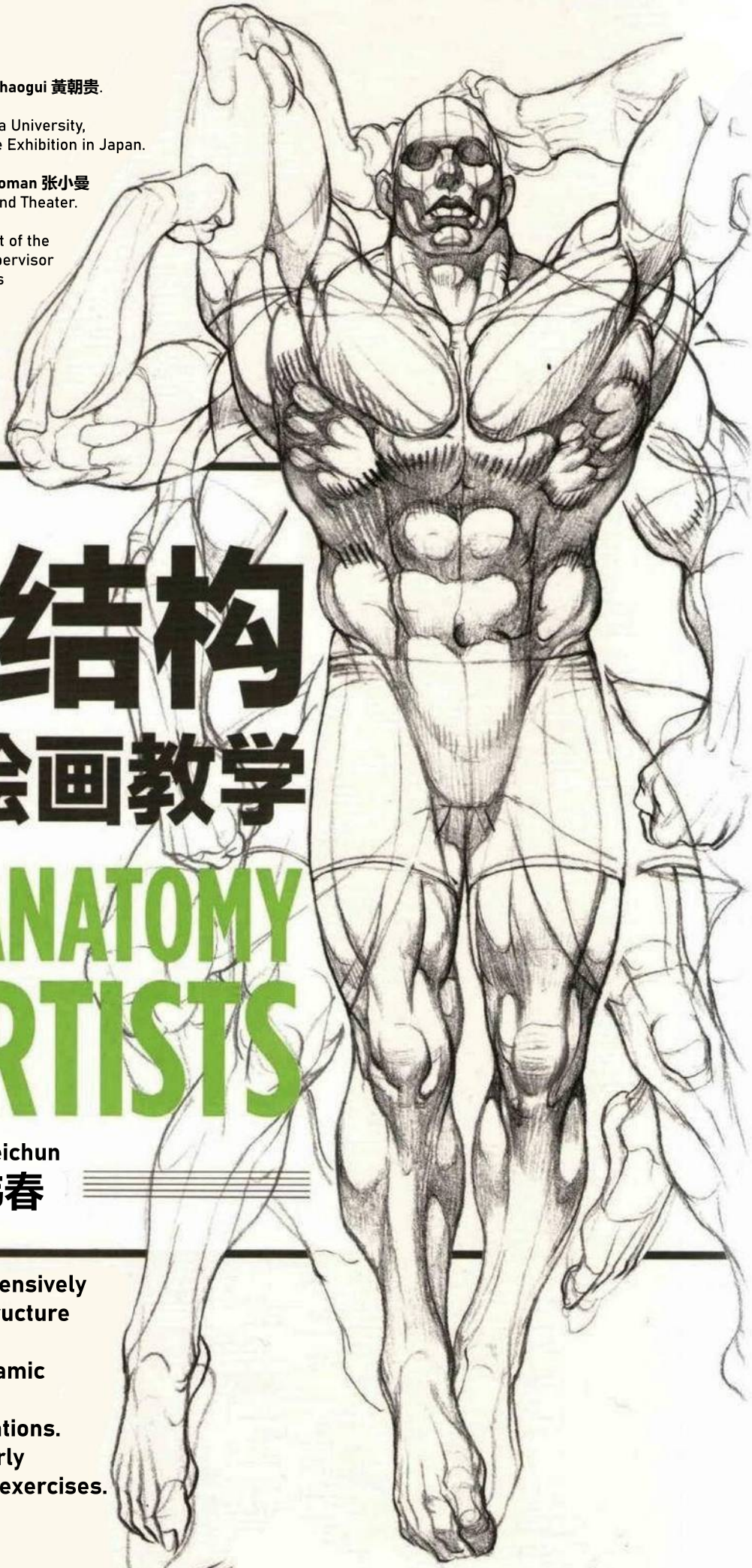
Sun Peng 孙鹏, a Ph.D. in Fine Arts from Tsinghua University, won the first prize at the 13th Oita Asia Sculpture Exhibition in Japan.

Chinese Academy of Art Master, artist **Zhang Xiaoman 张小曼** collected by China Art Museum and National Grand Theater.

Associate Professor in the Sculpture Department of the Academy of Fine Arts at Tsinghua University, Supervisor of Master's Students, Head of the Metal Materials Laboratory, and Mentor at the BMW-Tsinghua Intangible Cultural Heritage Research and Innovation Base, **Wang Yinan 王轶男**.

Multiple anons on /ic.

Translated by CEO of /beg/ himself.



人体结构 原理与绘画教学

HUMAN ANATOMY FOR ARTISTS

Xiao Weichun
肖玮春

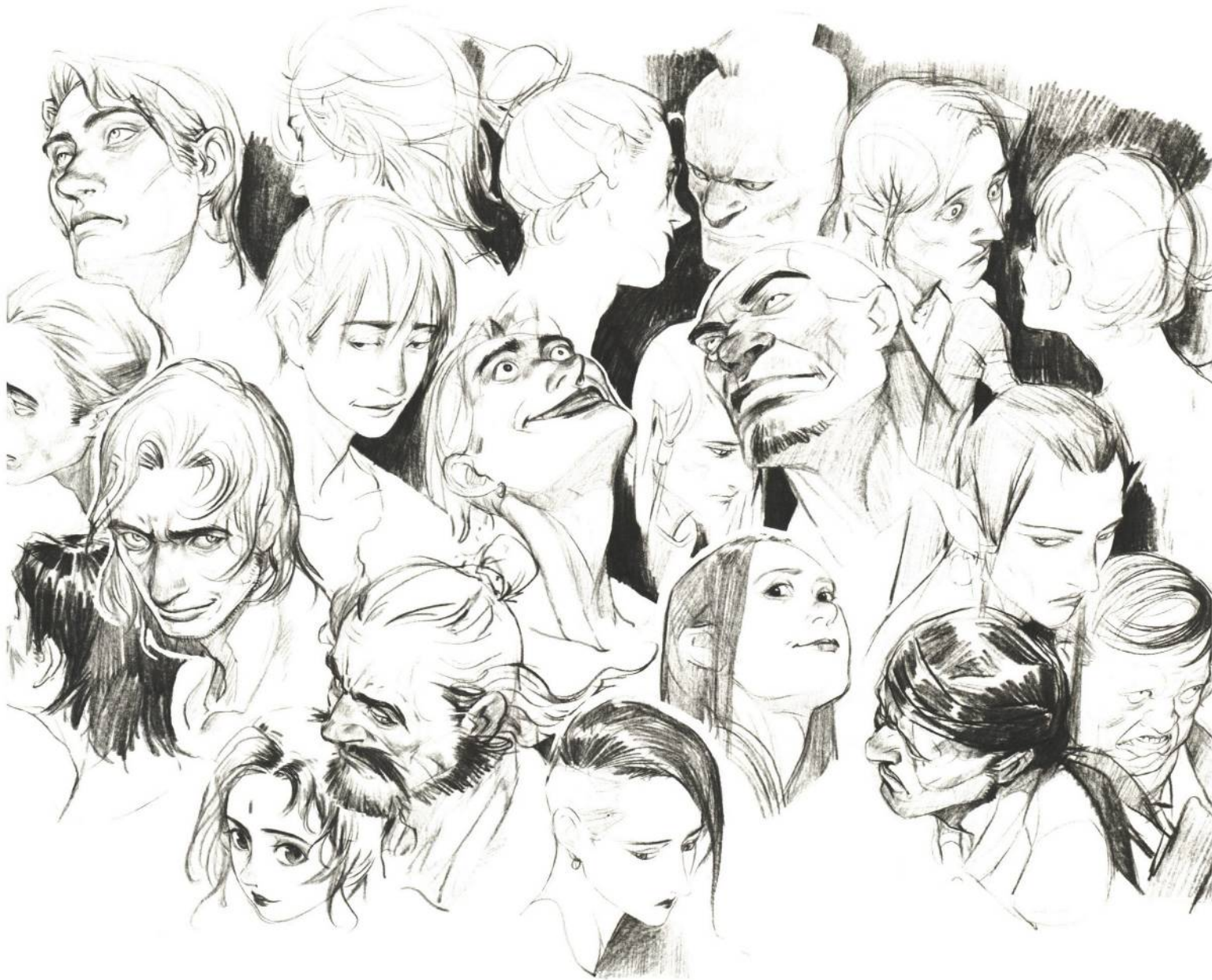
- The **7** chapters cover comprehensively the principles of human body structure and practical tips for drawing.
- Over **70** themes of human dynamic structure drawing knowledge.
- Over **2200** hand-drawn illustrations.
- Includes a wall chart with nearly **80** examples of human dynamic exercises.



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人体结构

原理与绘画教学

肖玮春 著/绘

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Executive summary

The animation human body is an interesting collection, and the characters in different animation works have different character characteristics. When people draw characters, they often don't know how to use the human body to create a distinctive character. When learning about the human body, there is no entry point for learning.

This book disassembles the structure of the human body, simplifies the knowledge needed to learn the human body, and explains the more difficult structural principles of the human body through simple geometric combinations. The book arranges the process of learning the human body to help everyone clarify the knowledge and abilities that need to be mastered at each stage. If you want to draw interesting anime characters, you need to master the basic knowledge of the human body and practice persistently. Drawing exercises need to be something you love sincerely, so that you can practice effectively. I hope everyone can find their own happiness on the road of painting.

This book is suitable for art students and teachers, employees of game animation companies, and game animation hand-drawing enthusiasts.

Painted by	Xiao Weichun
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Recommendations

All great creations are based on a deep understanding of oneself. An ancient saying goes "ghosts are the easiest", things that are untraceable can often be subjectively imagined, but the shaping of "humans" is always traceable. If you want to express the metaphysical through the image of "characters" without being affected by the surface, you must first master the laws that are close to the essence. "Principles of Human Body Structure and Drawing Teaching" provides us with a basic foundation, detailed and systematic explanations help us build a rational logic, but the direction is the sublimation of sensibility expression and the freedom of imagination.

Sun Peng, Ph.D. in Fine Arts from Tsinghua University, sculptor

Art is something that is difficult to master, and also difficult to even get started. It is too abstract, what is good and what is bad, it all depends on the individual's perception, and there is no standard answer. Artists need to continuously accumulate knowledge and skills, and the higher their comprehensive quality, the more profound their works will be. Of course, technical skills must be solid in order to not be restricted by one's own abilities. To fully express oneself and move the audience, one must have a solid foundation of basic skills and excellent aesthetic judgment.

In a piece of animated work, the structure of the plot is the backbone, the characters are the muscles, the actions and effects are the blood, and the conveyed ideas are the soul, all intertwined and inseparable. Although at first glance it may seem different from traditional art, they ultimately come from the same source. Just like artists, animators need to have solid basic skills and excellent aesthetic judgment to fully portray the subjects they are drawing.

To enter this field, the first task is to understand human structure, as images, whether they depict gods or ghosts, ultimately originate from humans. The internet age has made it easier for those interested in animation to self-study, but good teaching resources are scarce, especially those that accurately link animation to human anatomy. The book "Principles of Human Structure and Drawing Teaching" provides detailed and clear explanations, showing the author's solid foundation in painting and in-depth research on human anatomy, forming their own unique teaching method that even readers with no prior knowledge can understand. Young people who love animation and wish to learn more about the industry are fortunate to encounter this book.

Zhang Xiaoman, Master of the Chinese Academy of Arts

Artistic human anatomy is a compulsory course for students majoring in fine arts. Anatomy knowledge is like the foundation of building a house for art students, and anatomical theory books are the most systematic learning materials. The well-known "Bridgman's Guide to Drawing from Life" has been regarded as a classic by those studying drawing since the 1970s. The book "Principles of Human Body Structure and Drawing Teaching" not only includes classic knowledge of artistic human anatomy but also covers popular cartoon character creation, providing systematically structured knowledge of human body structure, space, and dynamics for professional students and anime enthusiasts. If anatomy knowledge seems like "dead" knowledge at first glance, understanding it thoroughly allows artists to freely express themselves without limitations in their artwork, bringing their characters to life.

Wang Yinan, Professor at the Sculpture Department of Tsinghua University's Academy

The illustrations in Yupai's books are composed of simple lines and shapes, which can clearly and distinctly present the basic anatomical features of the human body from different perspectives. They directly and accurately convey the core points of the book, allowing readers to understand anatomical knowledge from the easy-to-understand teaching methods.

Renowned author and translator Guige

Preface

From the moment we are born, each person has their own story. For me, I experienced a transformation during my teenage years. At that time, I was not focused on studying, but rather wasted time reading novels, browsing the internet, and trying to come up with stories that would impress my classmates. My interest in art and creativity grew over time, and creating became my greatest joy. It was not until high school that I was exposed to professional art training, working with still life, plaster, and figure models. Despite facing challenges, I persevered in my studies and eventually gained admission to a prestigious university after intense preparation and hard work. I was fortunate enough to attend a top university after my second attempt at the college entrance exam.

The time in university is beautiful and short. During this time, I have met many friends with different talents in treating diseases, opening up more possibilities. Gradually exploring new fields beyond the art exam, I have spent a happy and carefree period of time.

However, during the study period, I encountered some difficult problems, such as perspective, composition, anatomy, sketching, design, and symmetry. In this process, our class consciously sorted and summarized the problems, systematically finding solutions. After some time, looking back at the notes I made, I felt a subtle improvement in myself, realizing what I have experienced and gained along the way.

The blessing in disguise is that several failures have strengthened my resilience in painting, gaining me original energy and motivation. I have learned to adjust my attitude towards painting and have experienced rapid growth.

When I shared these organized notes, I received feedback from many friends, realizing that notes can help solve problems encountered in the process of drawing. It made me feel empowered, solidifying my path towards art education, a journey I had hesitated to embark on in the past. From studying anatomy out of curiosity, I also explored the field of engineering design, eventually leading to self-exploration and learning, shaping my experience and perspective on value adjustment.

In the future, I will continue to explore which path is best for me and maintain the determination to walk down that path. Those who support me in this journey are my true companions.

Unknowingly, it has been more than ten years since my interest in art began, encountering various questions from friends recently about human anatomy. "Principles of Human Structure and Life Drawing" is not only a compilation of my thoughts on teaching art, but also a reflection of personal growth and heritage. I hope it can bring some insights to friends who are passionate about art.

While the level of artistic achievement may fluctuate, encountering challenges and setbacks is inevitable. I sincerely hope that teachers and students can support each other and strive for improvement.

The Spring Brother who paints

(Xiao Weichun)

July 2021

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Chapter One

Human Body Support

第一章

人体支架

- 01 熟悉、掌握绘制人体支架
- 02 人体的关节点
- 03 人体比例的变化关系
- 04 人体支架的绘制练习
- 05 肌肉与关节的关系
- 06 不同人物的比例调控
- 07 几何体透视练习
- 08 如何利用方块体塑造人体
- 09 圆柱体和人体的关系
- 10 人体和平面形状

01 The Skeleton

The human body structure is complex, including bones, muscles, etc. Many people are often baffled by the complex structural relationships when they come into contact with the human body.

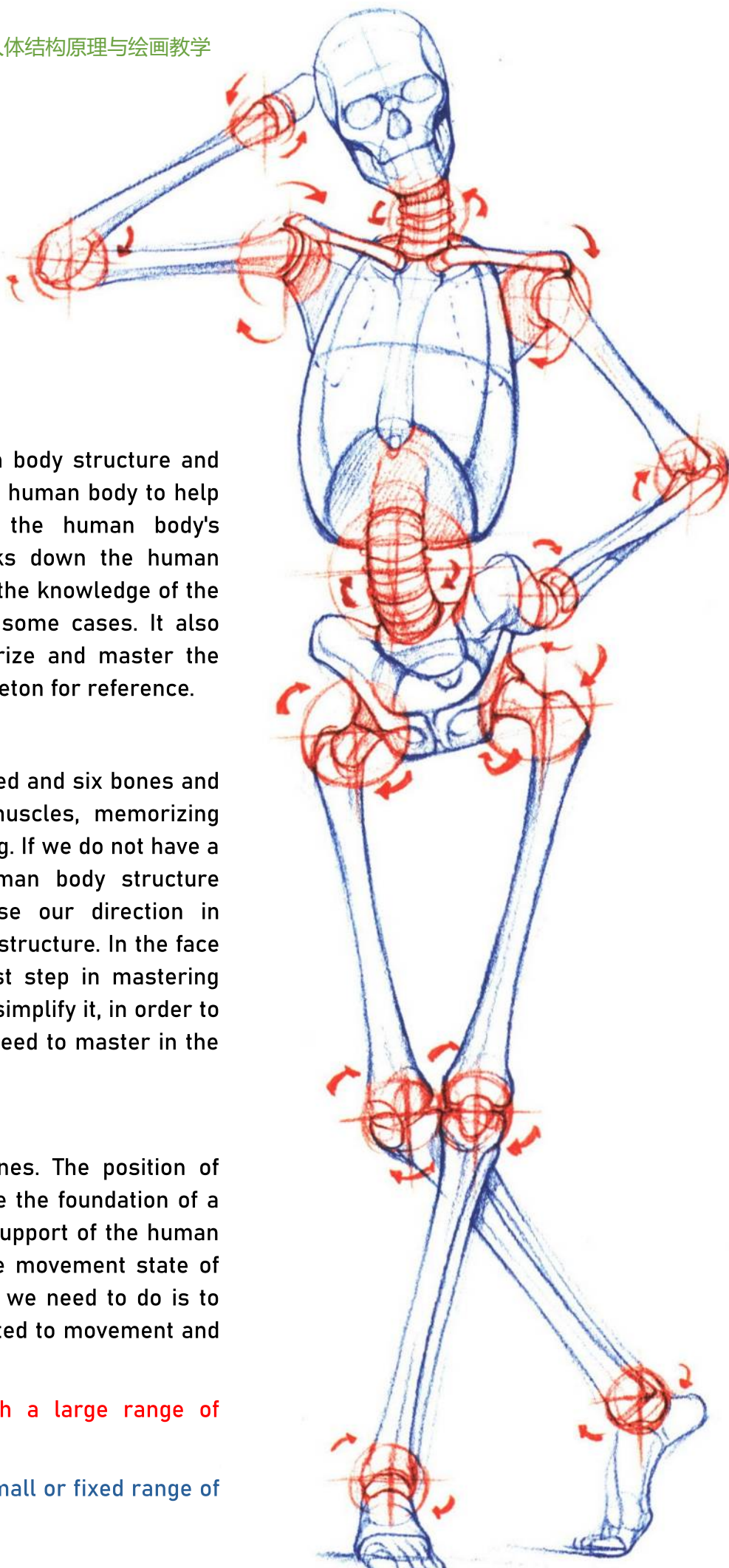
This chapter divides the human body structure and explains some key points of the human body to help everyone better learn about the human body's knowledge. This chapter breaks down the human body's skeleton and introduces the knowledge of the human body skeleton through some cases. It also lists some methods to familiarize and master the drawing of the human body skeleton for reference.

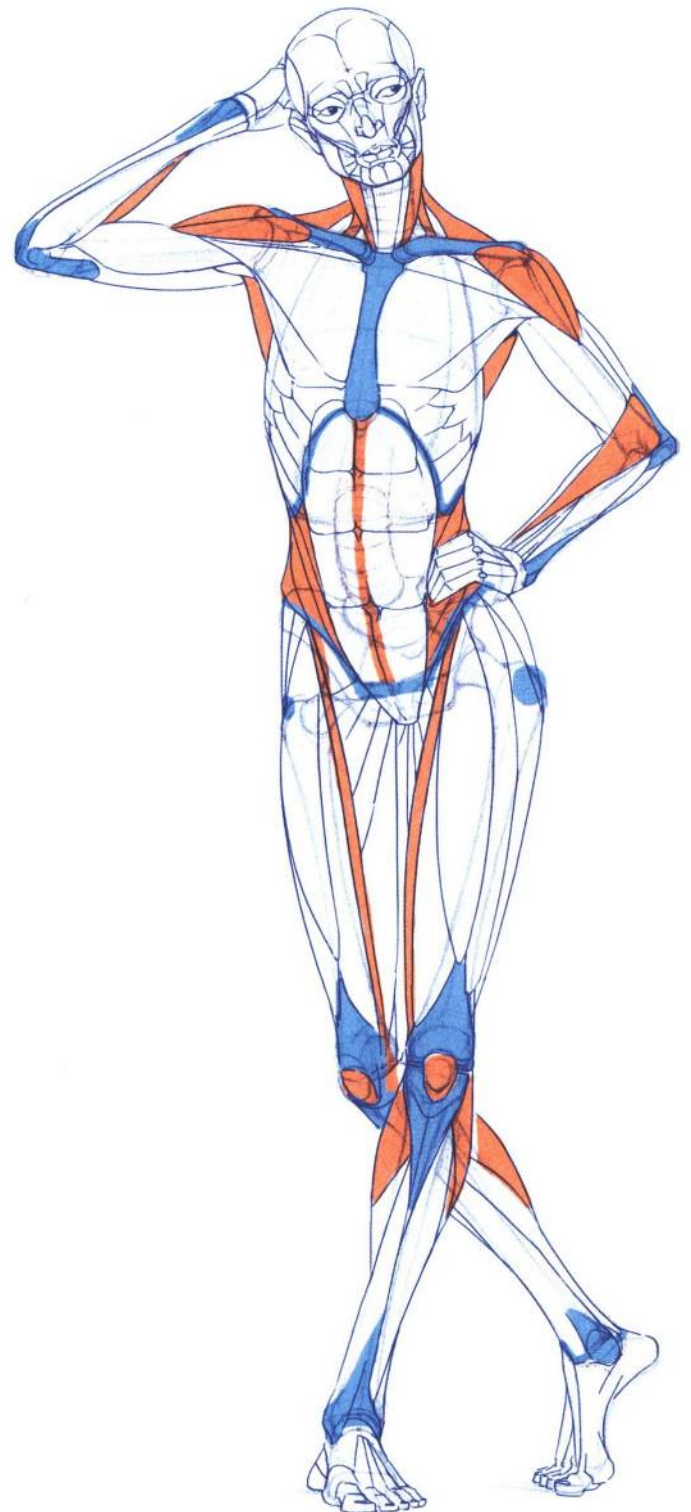
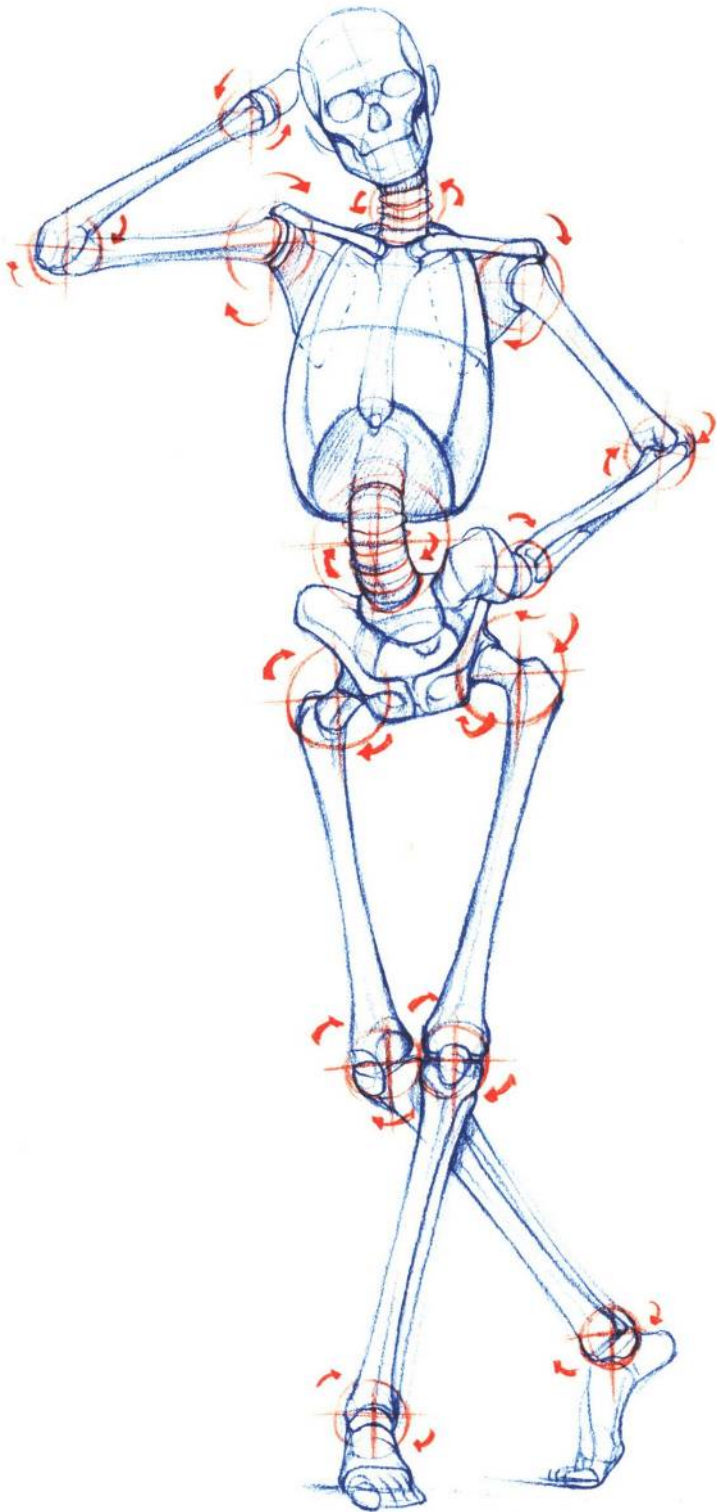
The human body has two hundred and six bones and six hundred and thirty-nine muscles, memorizing them all can be quite challenging. If we do not have a clear idea when studying human body structure knowledge, we can easily lose our direction in understanding the human body structure. In the face of complex knowledge, the first step in mastering the human body structure is to simplify it, in order to quickly find the key points we need to master in the complex human body structure.

Firstly, let's talk about the bones. The position of bones in the human body is like the foundation of a building, it is the fundamental support of the human body. If we want to capture the movement state of the human body, the first thing we need to do is to effectively divide the areas related to movement and stillness.

Dynamic area: The region with a large range of skeletal movement.

Static area: The region with a small or fixed range of skeletal movement.





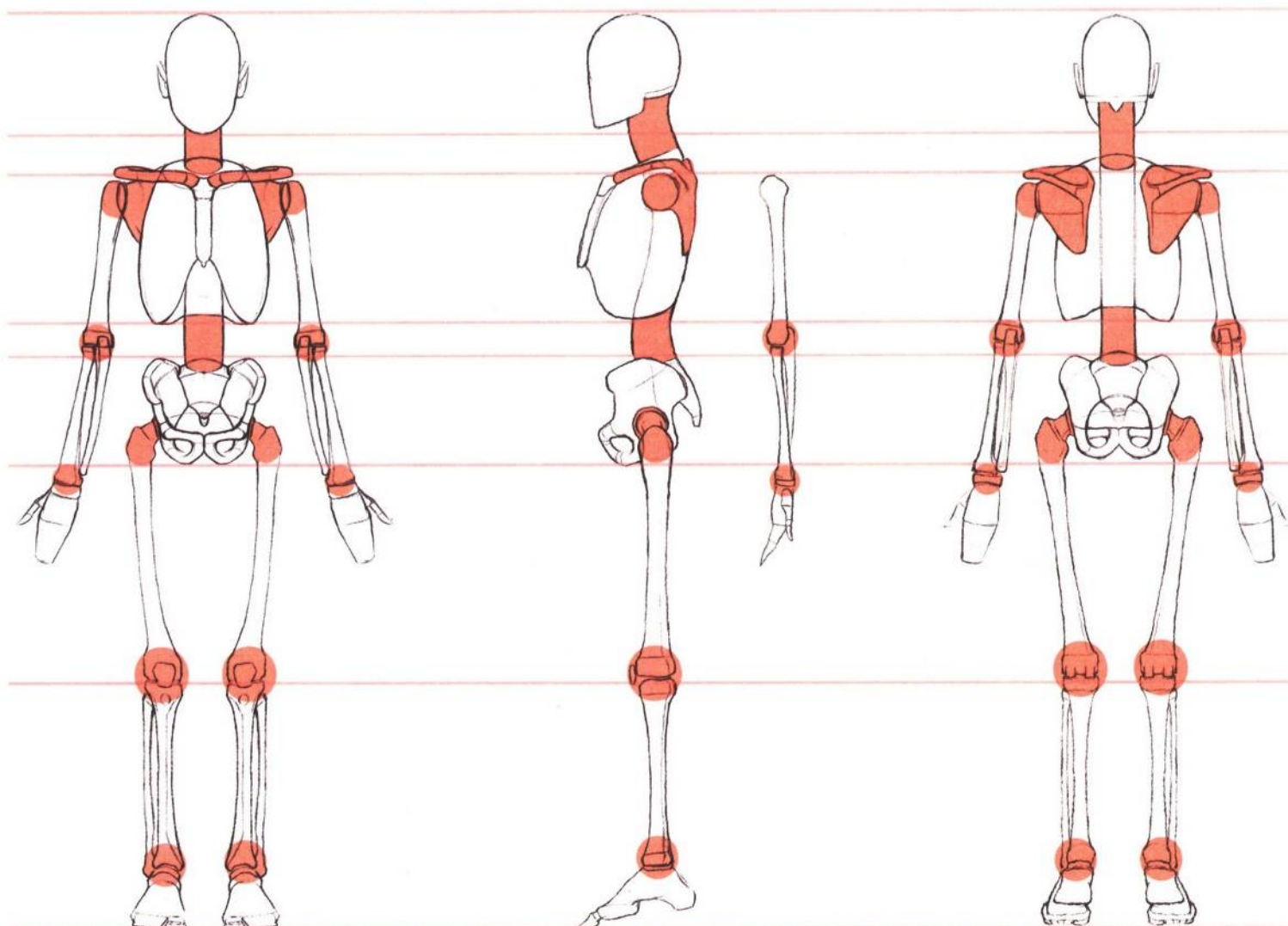
By dividing the motion and clean areas of the skeleton, we can better understand the relationship between muscles and bones: muscles mainly attach to the growing bones, and the movement of bones depends on the traction of muscles. When observing muscles, we can pay special attention to the muscles on the joints of the spine, shoulders, and limbs, because muscles change with the movement status of the joints when the human body is in motion.

The purpose of learning human body structure is not only to understand the skeleton and muscles of the human body, but also to learn how to use relevant knowledge to create a satisfactory character. The process of creating a character can be simply divided into the following two steps: (1) Constructing a solid human body framework. (2) Shaping on this human body framework. The human body framework not only refers to the bones and muscles of the human body, but also includes the proportions, space, and movement status of the human body.

02 Joints of the human body

When drawing a three-dimensional view of a bone, you need to draw the horizontal reference line first, and then you should not draw the front, side, and back of the bone one by one, as it is easy to focus on all the bone structures that you see.

When we are familiarizing ourselves with the skeleton, we need to understand the shape of the bones from different angles. Because when doing different movements, the **joints** of the human body will undergo changes. This not only requires us to understand the shape of each joint from different angles but also to understand their respective movement patterns.

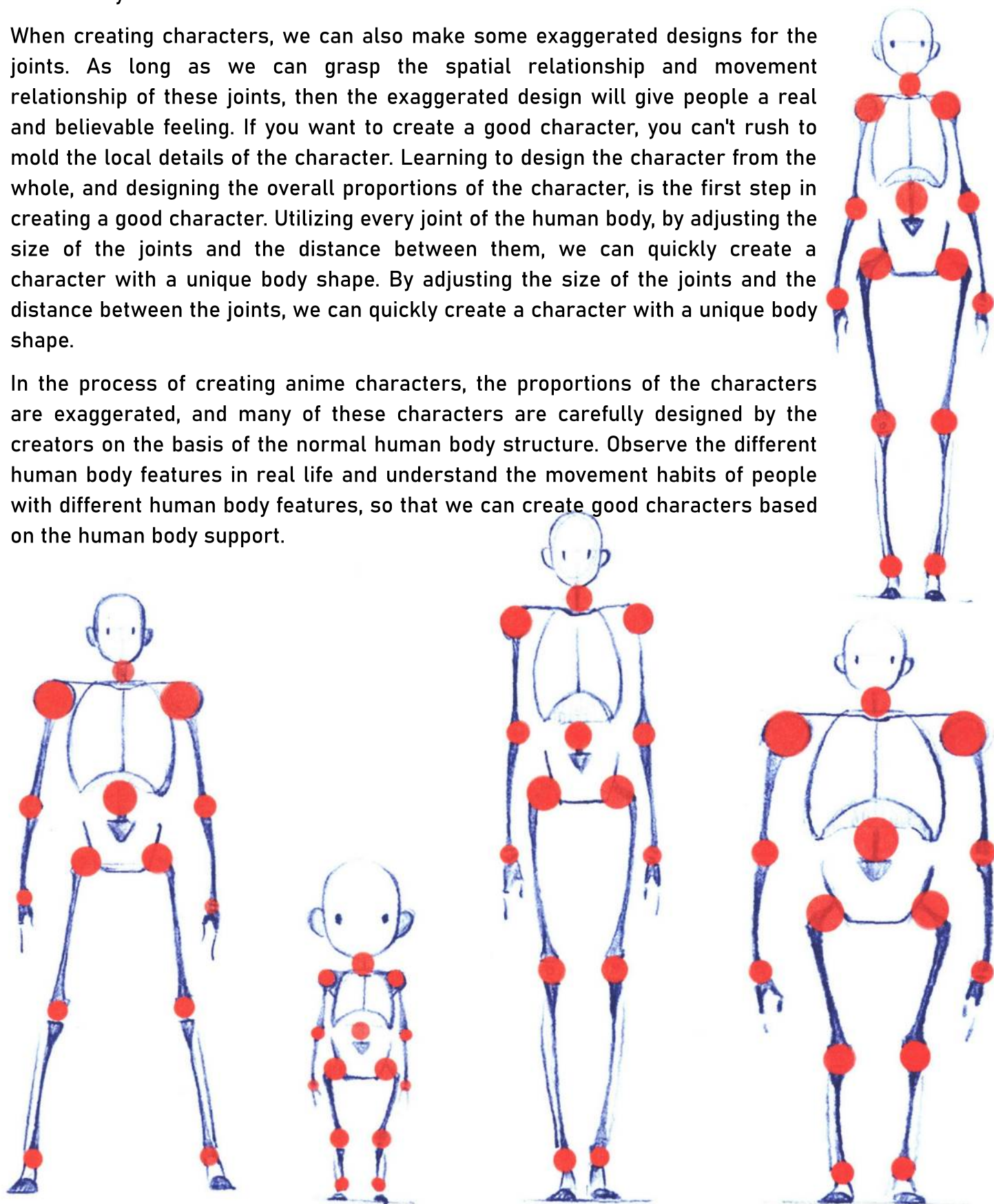




When drawing the joints of the human body, we can move the corresponding joints on our own body to feel the movement of these joints. When we start to learn about the bone structure, we should not rush to understand the 206 bones one by one, as this will easily discourage us from drawing. When practicing drawing the three views of bones, we can make some simplifications. To simplify, we need to emphasize the **key points**, and here I would like to emphasize a few large joints. These joints are mainly located in the spine, shoulders, hips, and limbs, and every flexion or extension of these parts will directly affect the movement of the whole character.

When creating characters, we can also make some exaggerated designs for the joints. As long as we can grasp the spatial relationship and movement relationship of these joints, then the exaggerated design will give people a real and believable feeling. If you want to create a good character, you can't rush to mold the local details of the character. Learning to design the character from the whole, and designing the overall proportions of the character, is the first step in creating a good character. Utilizing every joint of the human body, by adjusting the size of the joints and the distance between them, we can quickly create a character with a unique body shape. By adjusting the size of the joints and the distance between the joints, we can quickly create a character with a unique body shape.

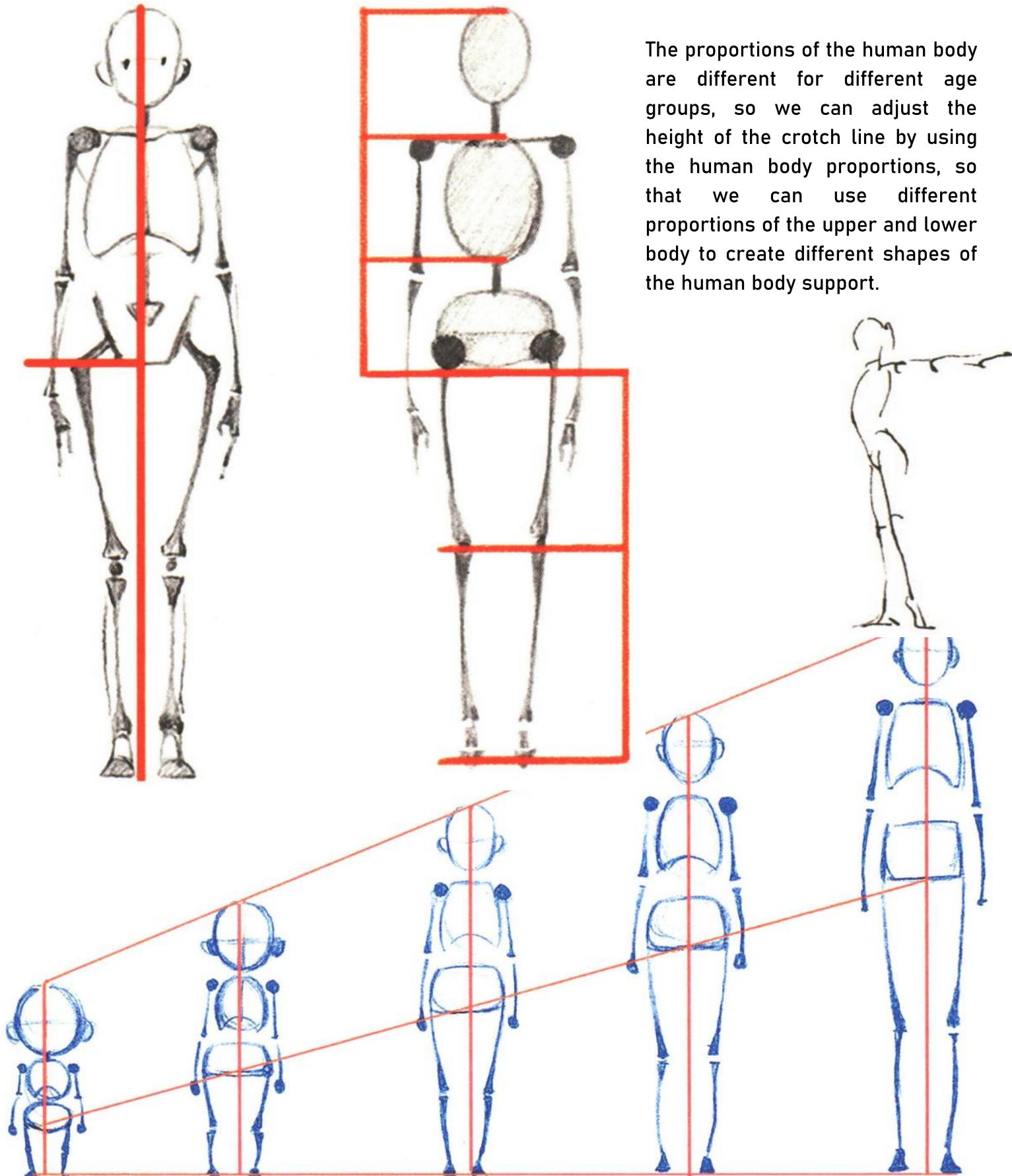
In the process of creating anime characters, the proportions of the characters are exaggerated, and many of these characters are carefully designed by the creators on the basis of the normal human body structure. Observe the different human body features in real life and understand the movement habits of people with different human body features, so that we can create good characters based on the human body support.



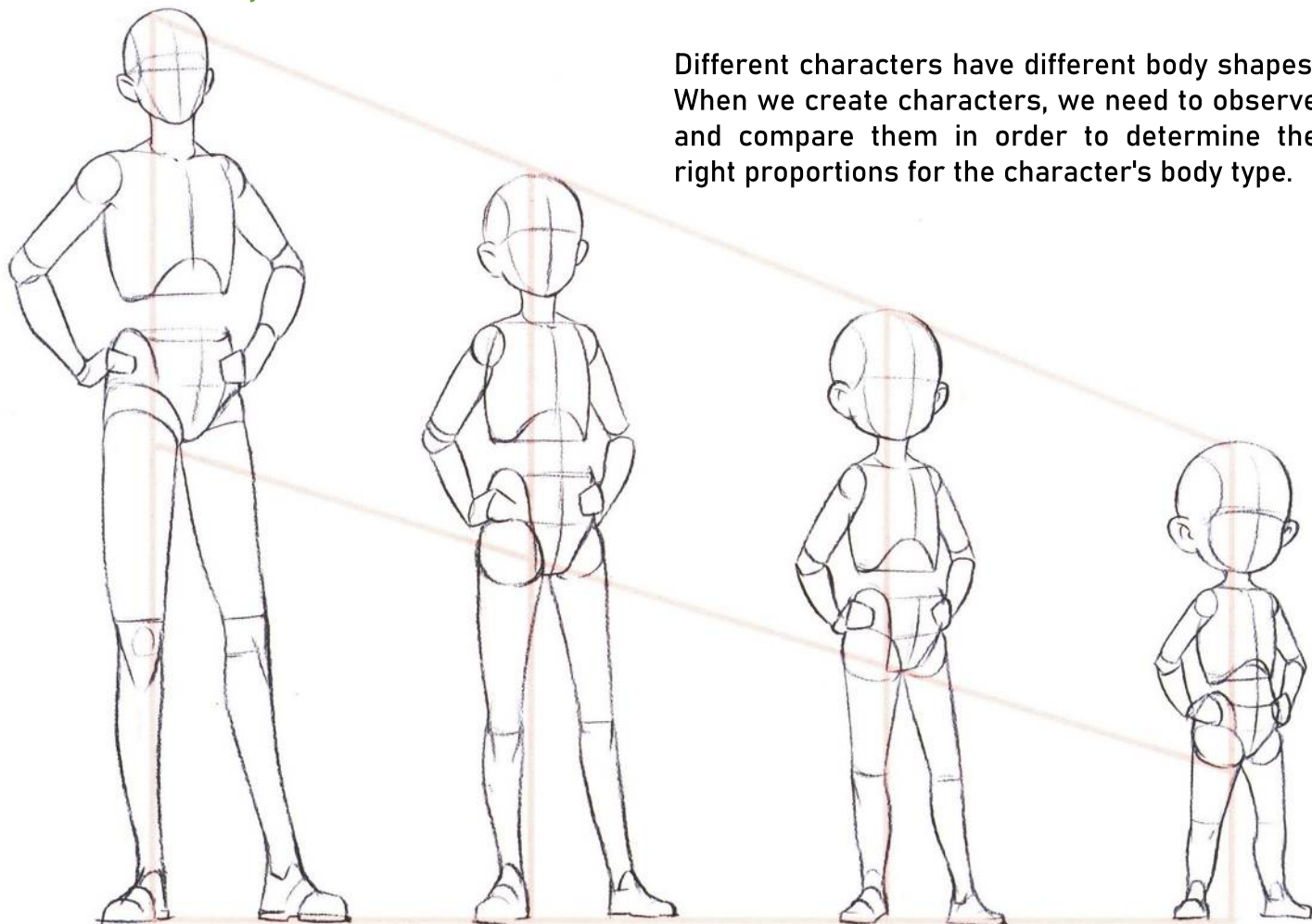
03 The changing relationship of human body proportions

The crotch of an adult is almost one-half of the height of the body. When drawing the upper body, the head and neck, chest, waist and hips are divided into three equal parts. When drawing the lower half of the body, the crotch to the knees and the knees to the soles of the feet are divided into halves.

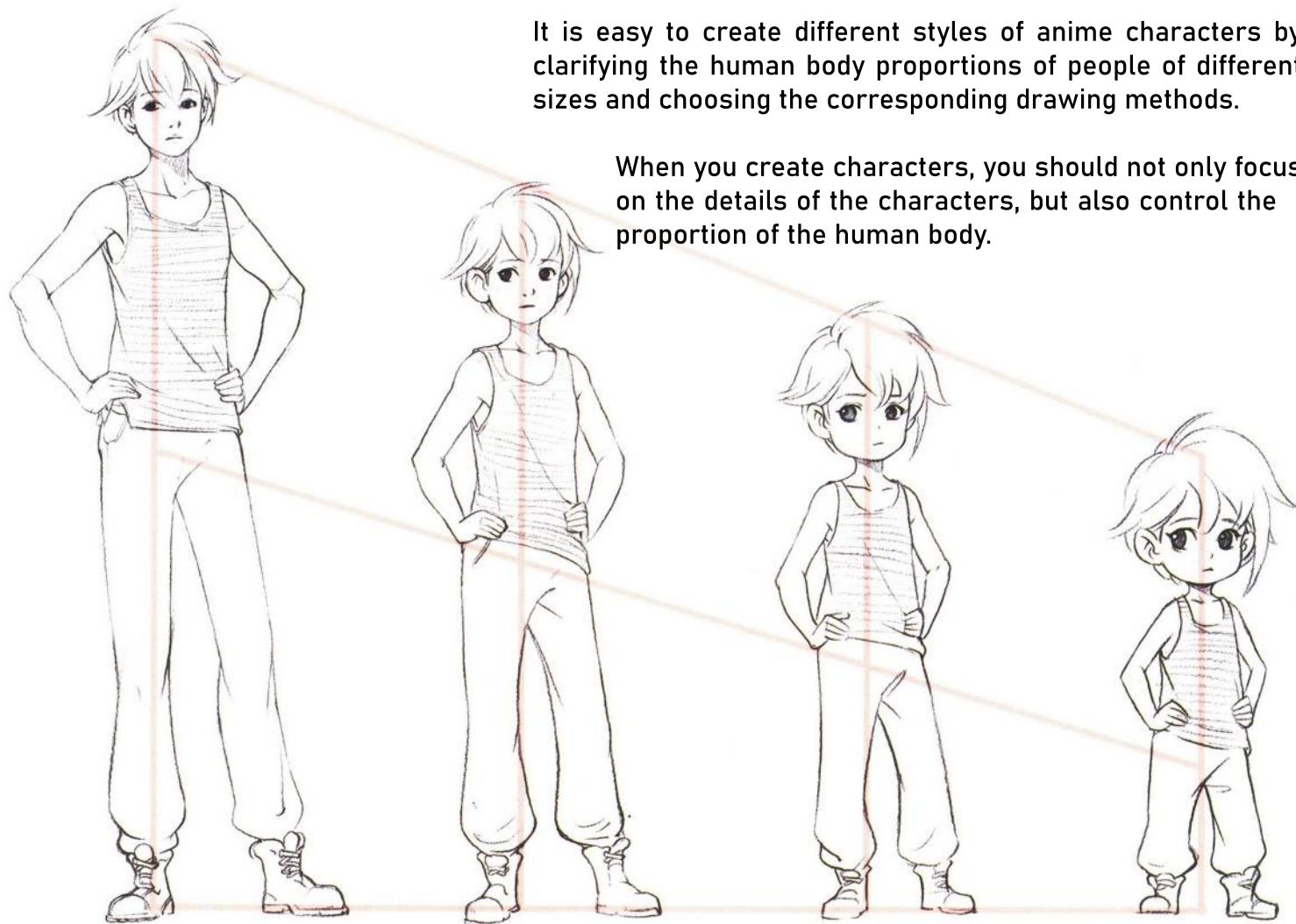
The proportions of the human body are different for different age groups, so we can adjust the height of the crotch line by using the human body proportions, so that we can use different proportions of the upper and lower body to create different shapes of the human body support.



Different characters have different body shapes. When we create characters, we need to observe and compare them in order to determine the right proportions for the character's body type.

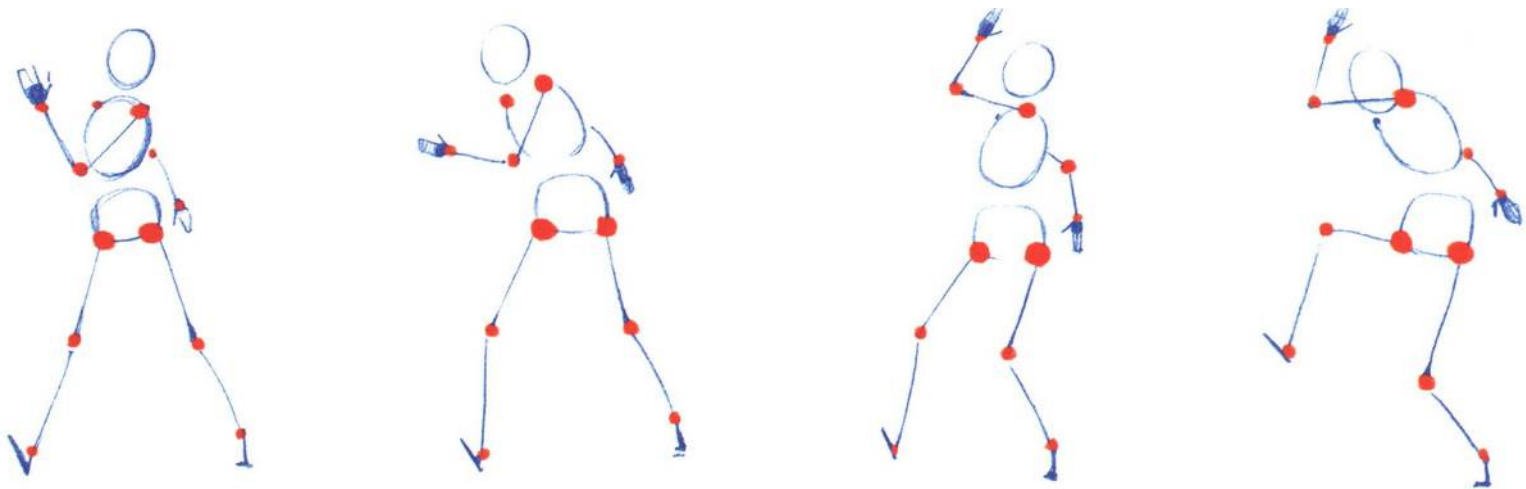


It is easy to create different styles of anime characters by clarifying the human body proportions of people of different sizes and choosing the corresponding drawing methods.

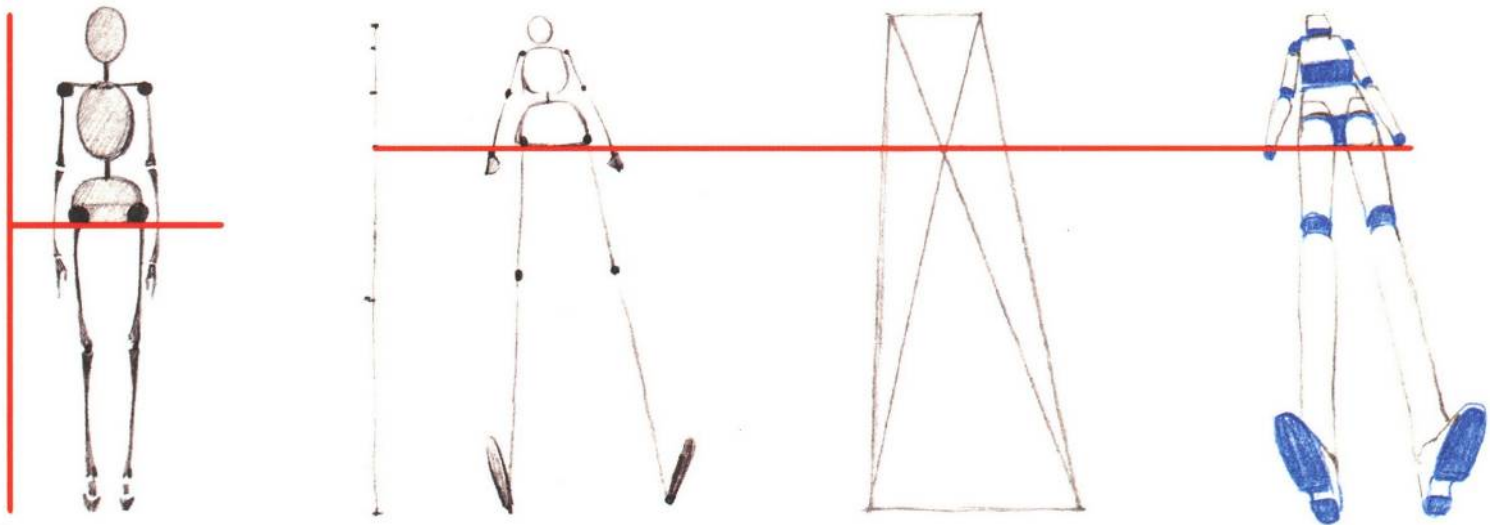


When you create characters, you should not only focus on the details of the characters, but also control the proportion of the human body.

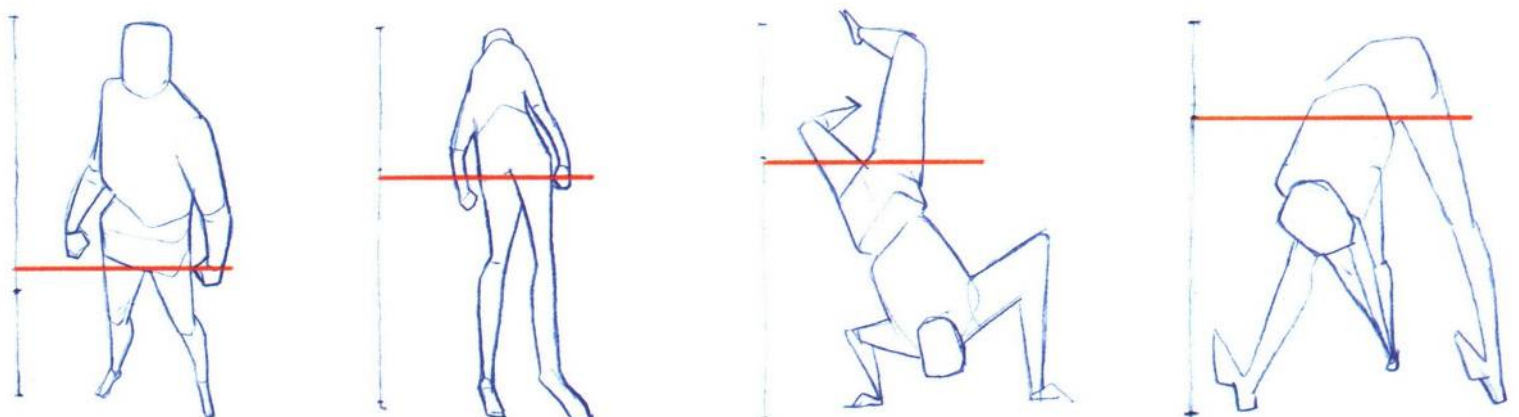
Influenced by the spatial relationship, the movement of each joint of the human body will lead to different changes in the proportion of the human body. In order to create a good human body dynamic, you need to master the proportion of the distance between each joint and the size of each joint through a lot of observation and practice.



The human body dynamics we usually observe often have a **perspective effect**. If you want to create a human body support with space, you should first determine the position of the crotch of the human body, and accordingly adjust the size of the three circles of the upper body and the length of the thighs and calves of the lower body, and then model the cross-section of the joints at each joint point.



When facing different angles of the human body, we can quickly find the position of the crotch by looking at the human body as a plane, and then the molding of the human body support will become very simple.



04 Exercise in drawing human body support

Draw a vertical line to determine the position of the crotch. This is a simple step, but the position of the crotch directly affects the final shape of the body.



Find the center line of the torso and use it as the centerpiece. Use this line as a centerpiece to draw the I and U shapes of the chest and front. This step allows you to effectively shape the torso of the human body.



Starting with the four spheres at the shoulders and front, draw the four glues. The elbows should be at waist level, and the knees should be in the middle of the range from the gears to the soles of the feet. Be sure to control the length of the limbs as you draw them.



Above the crotch, draw three circles representing the head, chest and hips. The shape of the three circles varies according to the shape of the body, its movement, and the angle from which it is positioned. When drawing the human body support, pay attention to the size of the three circles and the distance between them.



Draw two **spheres** at the shoulders and hips, keeping the size of the four spheres under control, with the sphere at the shoulders smaller than the sphere at the hips.

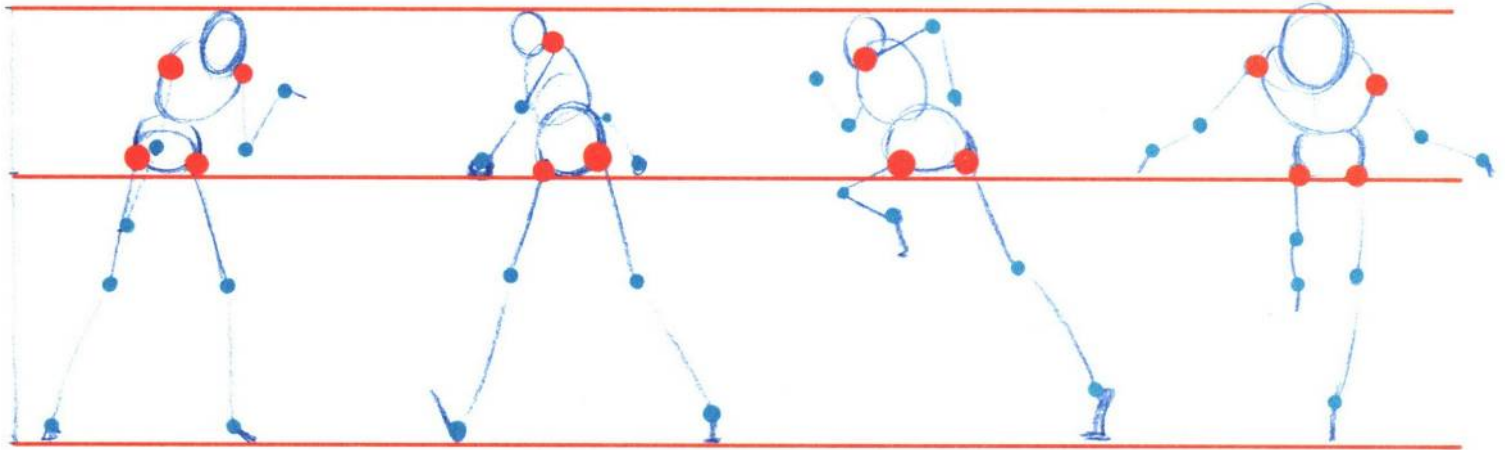


The whole body can be divided into the torso and the limbs. First determine the position of the crotch, then draw the torso and limbs, and then refine the drawing to complete the human body support.



Using the same proportions of the human body, we can draw the human body in different states.

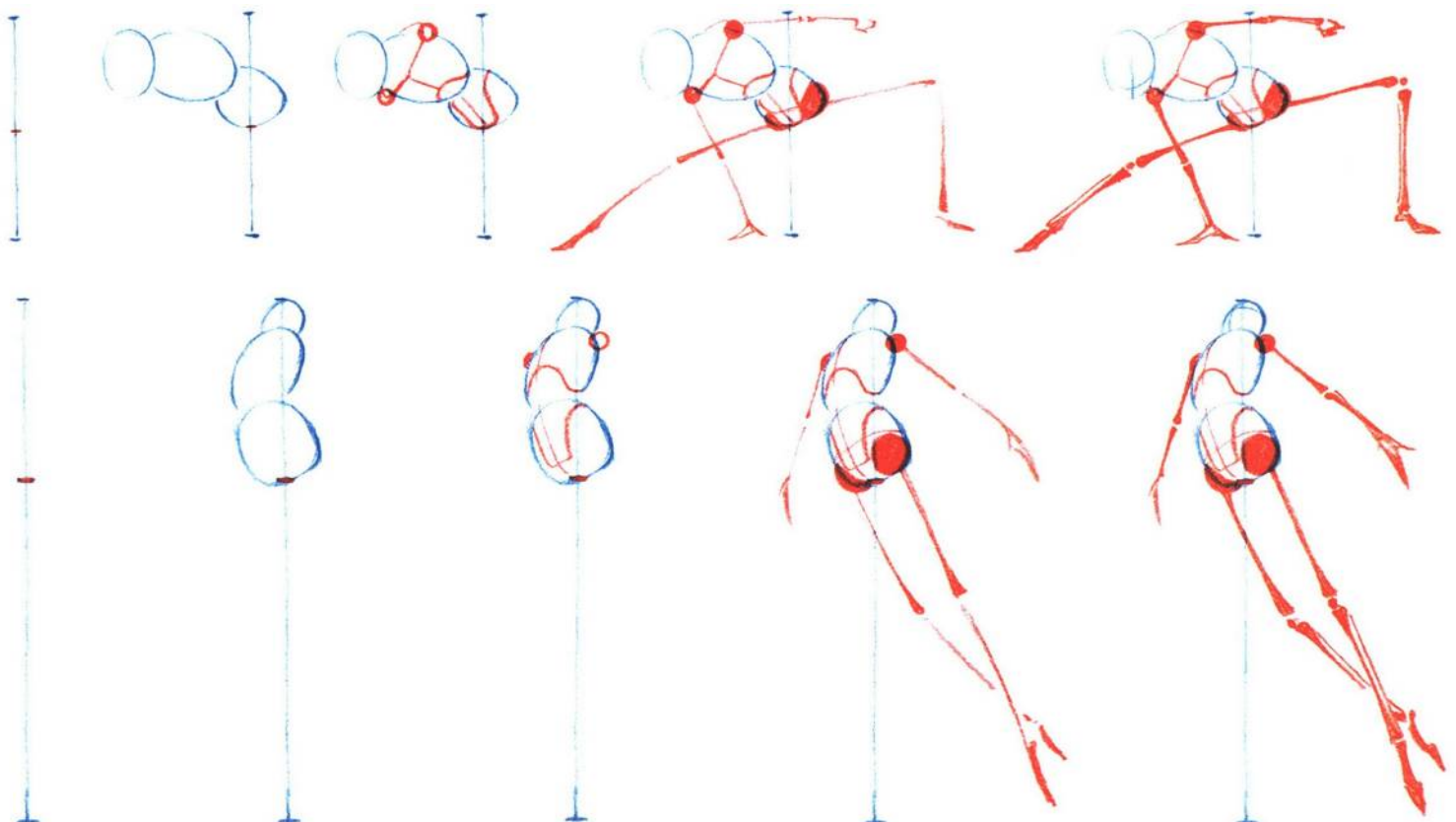
1. Draw the upper half of the body in different states in the same proportion of the reference line. Make sure to control the size of the three circles and show the shading between them.
2. Find the positions of the four spheres for the shoulders and the gum area. Try not to place the spheres in close proximity to each other, and adjust their sizes and distance between them.
3. Make the four spheres separately, and pay attention to control the length of the limbs and the



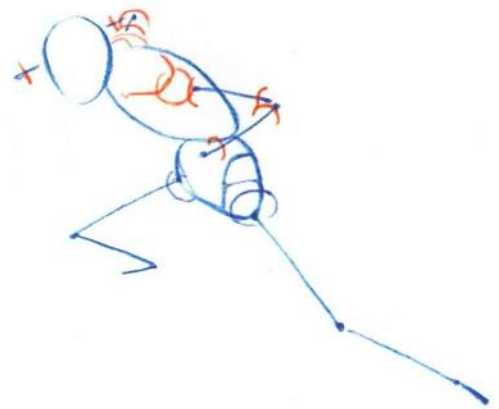
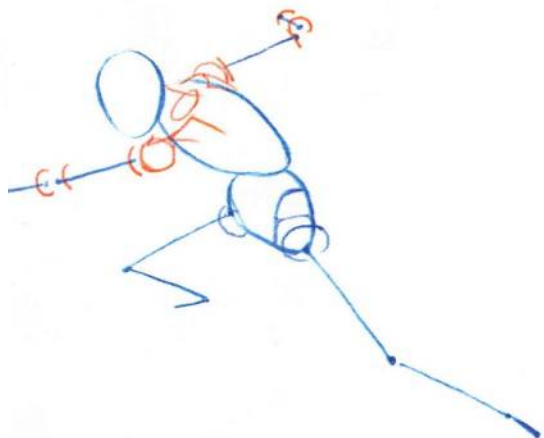
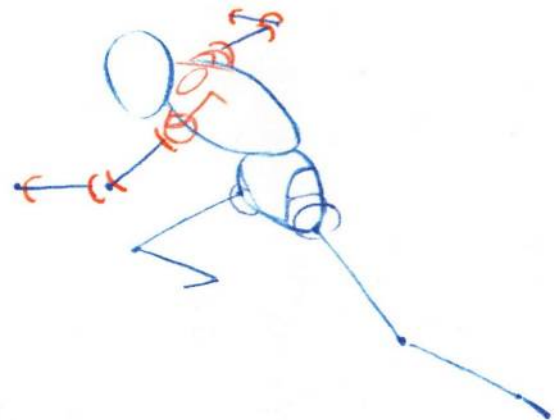
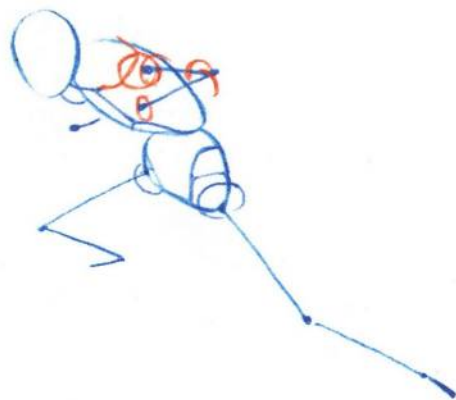
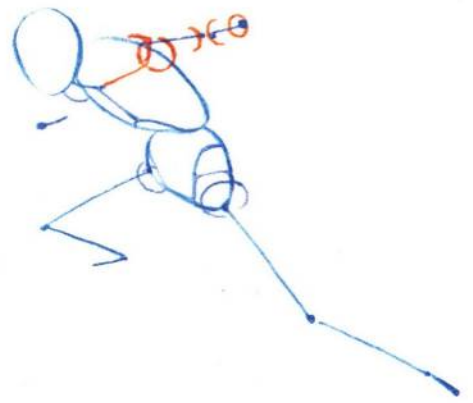
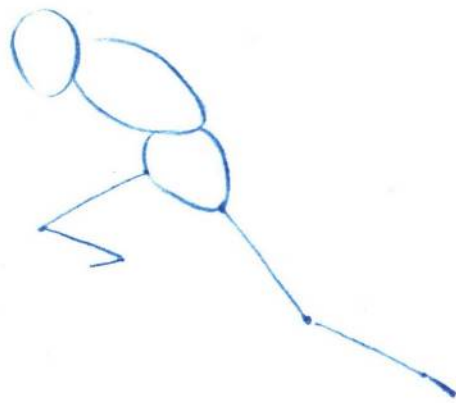
position of the joints of the limbs.

The use of different proportions of the human body, drawing different dynamic human body support

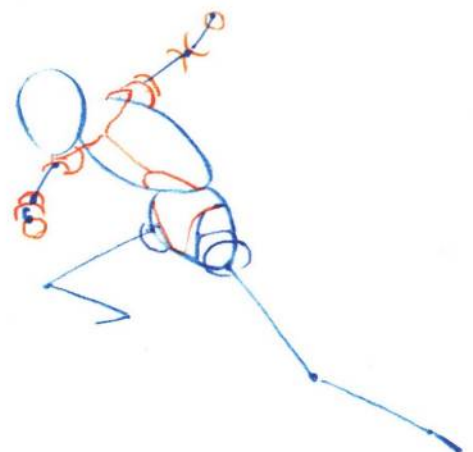
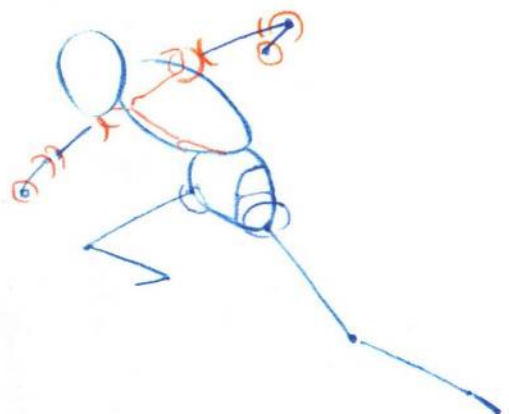
1. Draw straight lines of different lengths to determine the position of the gears.
2. Draw three columns in a limited space; draw the "I" and "U" shaped supports on the chest and hips, and draw two spheres on the shoulders and hips.
3. Arrange the dynamics of the four closed positions in the non-resistant area.

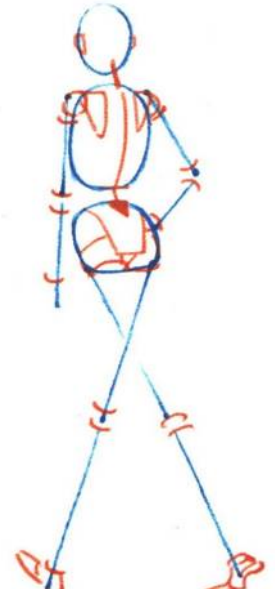
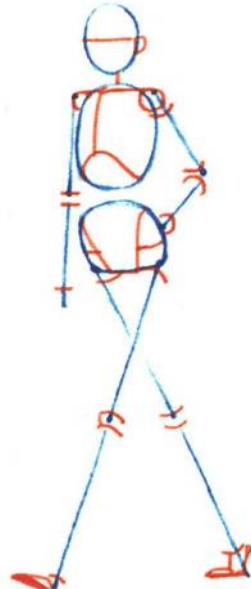


To represent the movement of a matchmaker, we need to pay attention to the variations of the cylinders on the limbs.

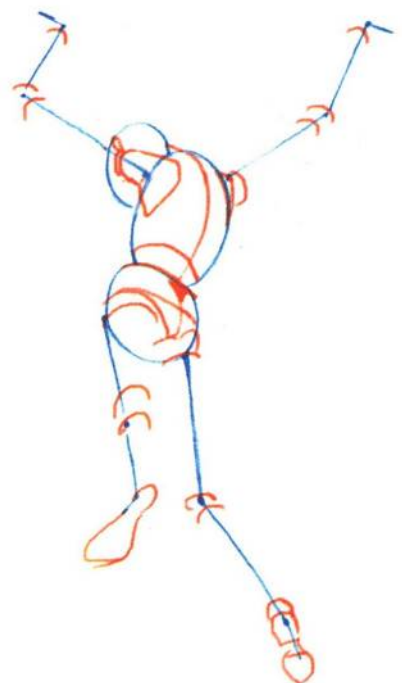
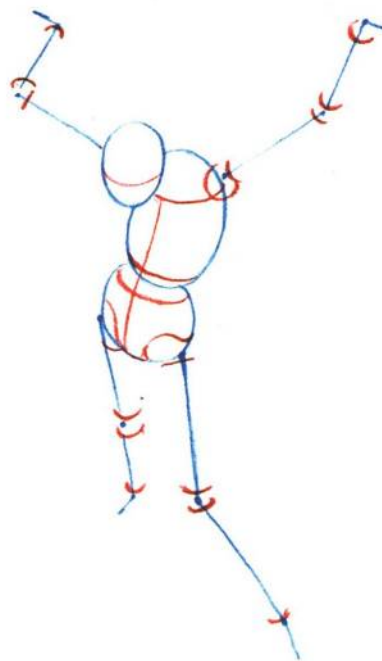
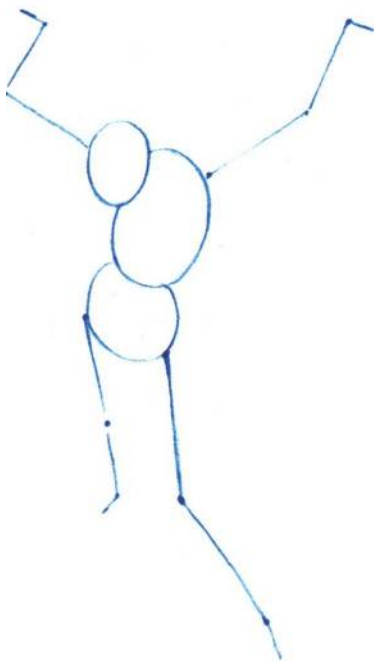
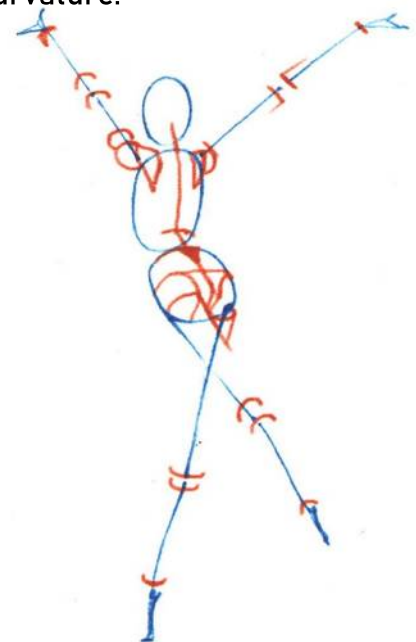
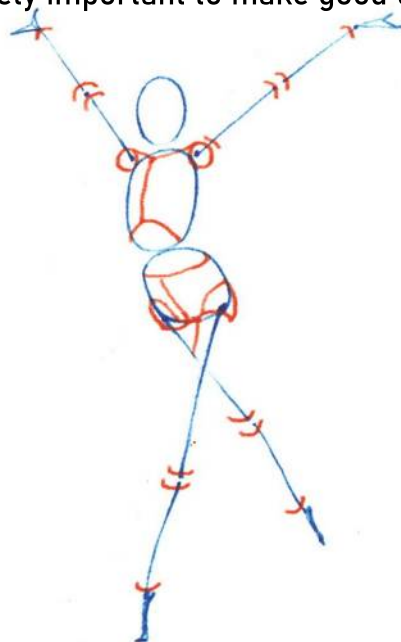
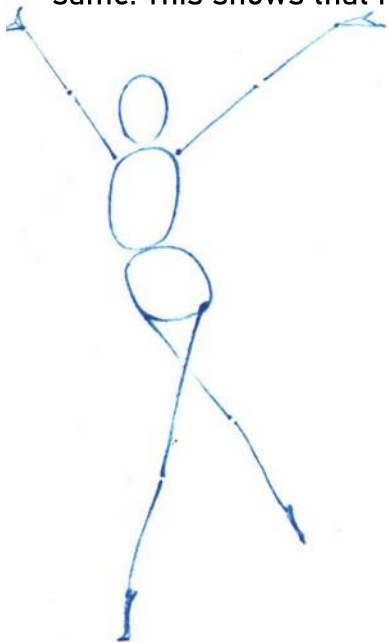


To draw natural limbs, we need to be sensitive to the curvature of the cylinder's cross-section.

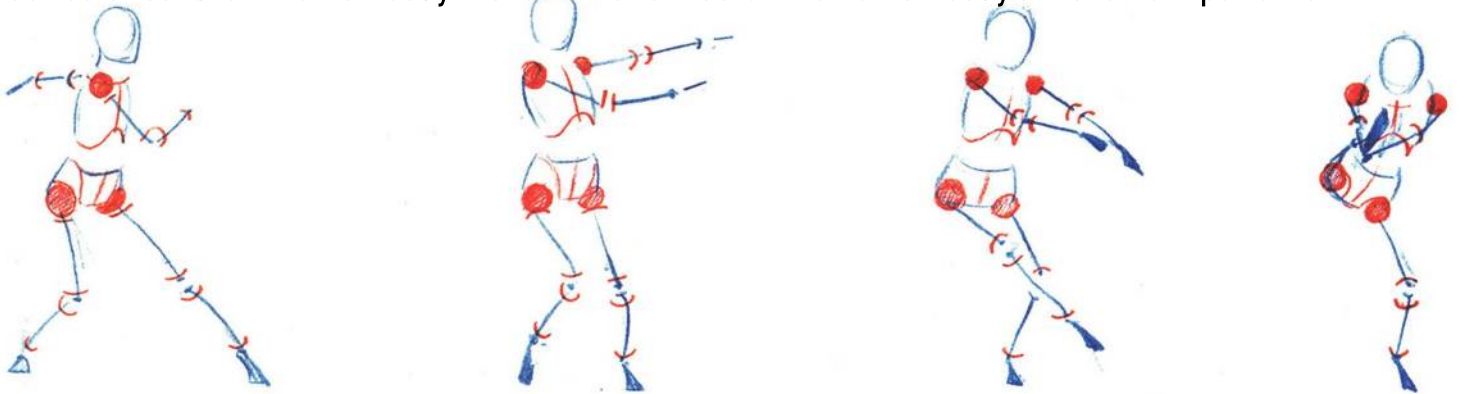




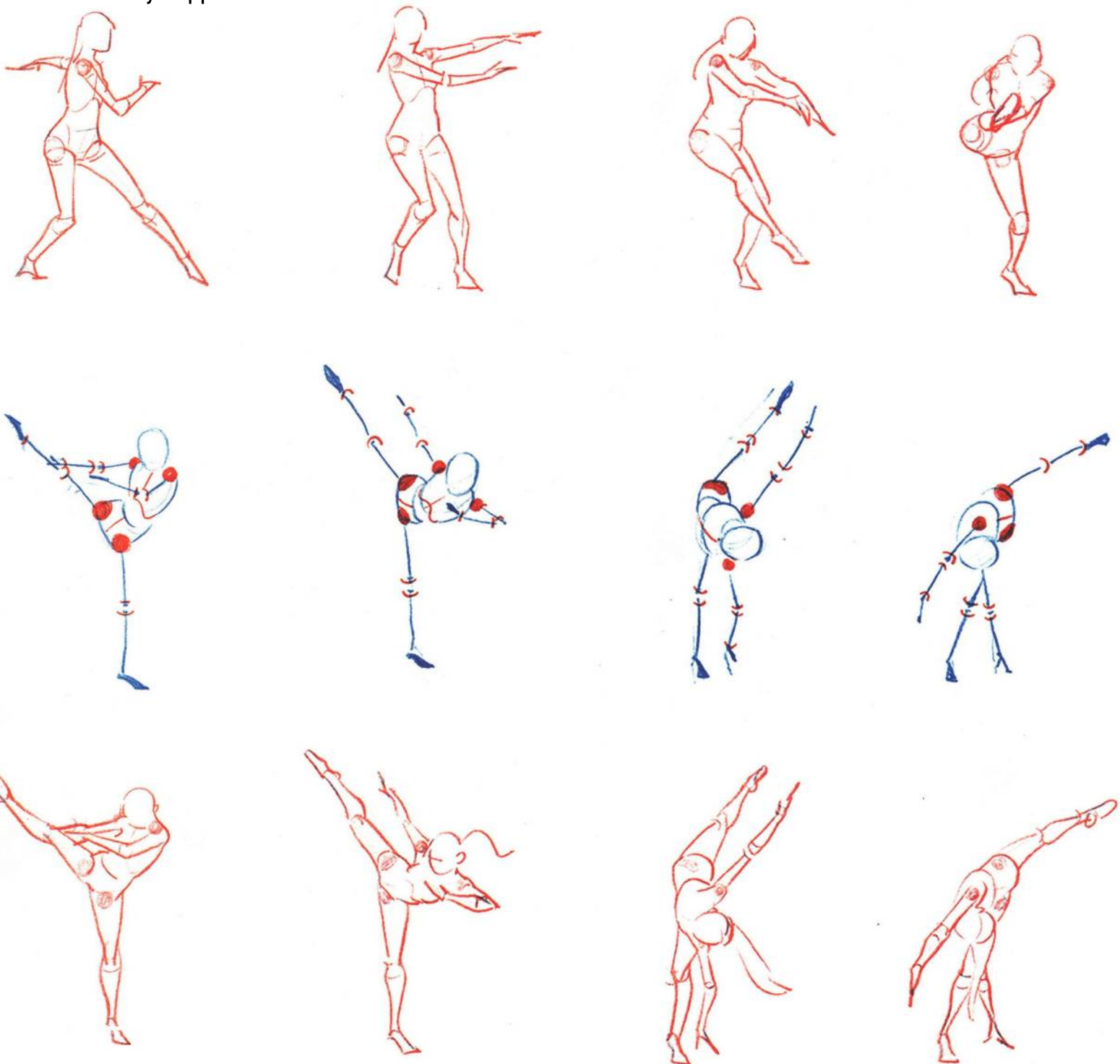
These three sets of exercises, each set of the human body used in the same bracket, but due to the different curvature of the cross-section of the cylinder, the final human body dynamics are not the same. This shows that it is extremely important to make good use of the curvature.



When we have reached a certain level of control over the curvature, we can practice drawing a series of coherent human body movements to master the human body's movement patterns.



This will help us to express a richer human body dynamics in the subsequent silent drawing of the human body support.



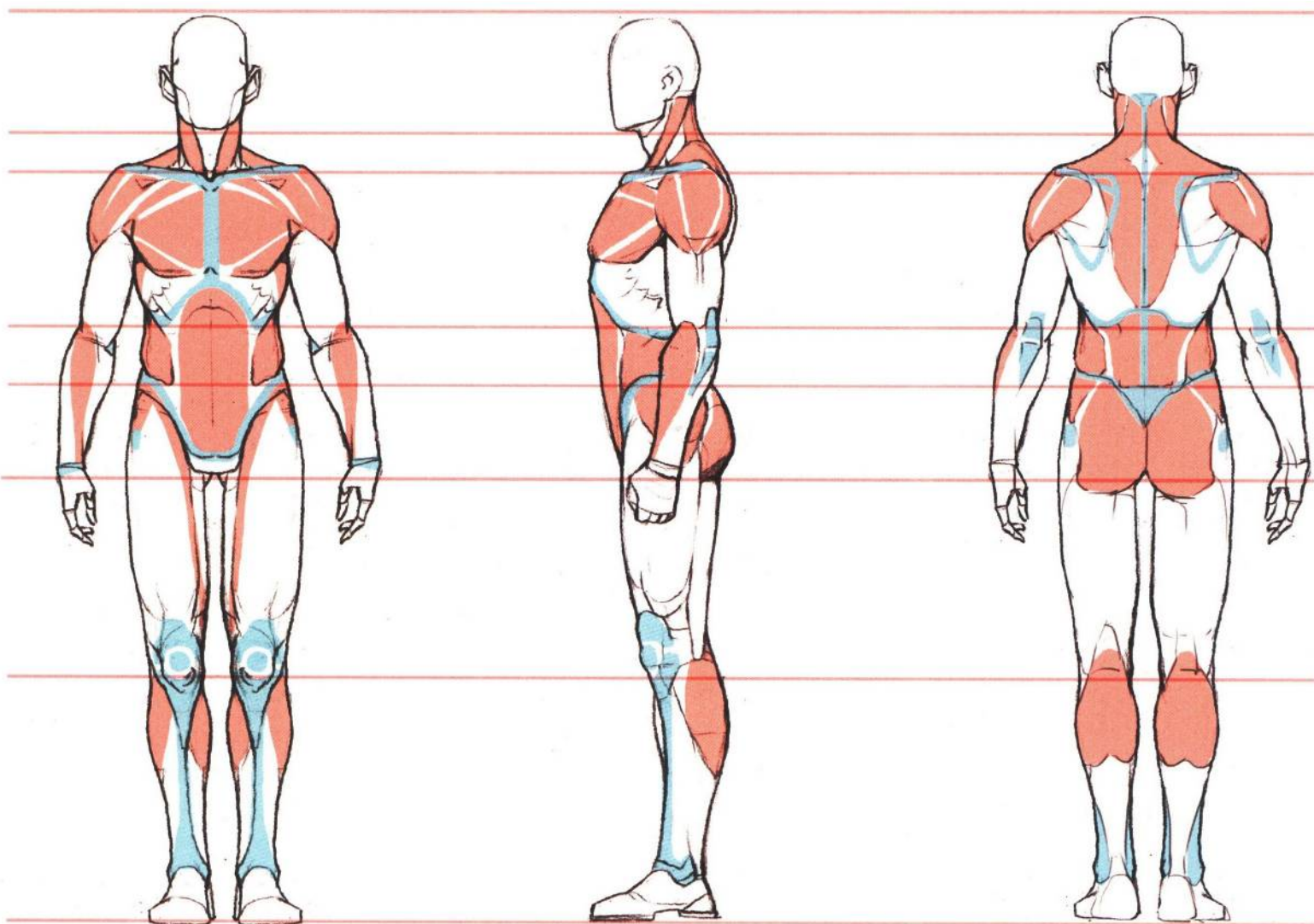
First we must find a good reference object and carefully observe the proportions and movement patterns of the reference object. Only after a certain amount of practice, we will have a clearer idea when we draw the human body support by heart.



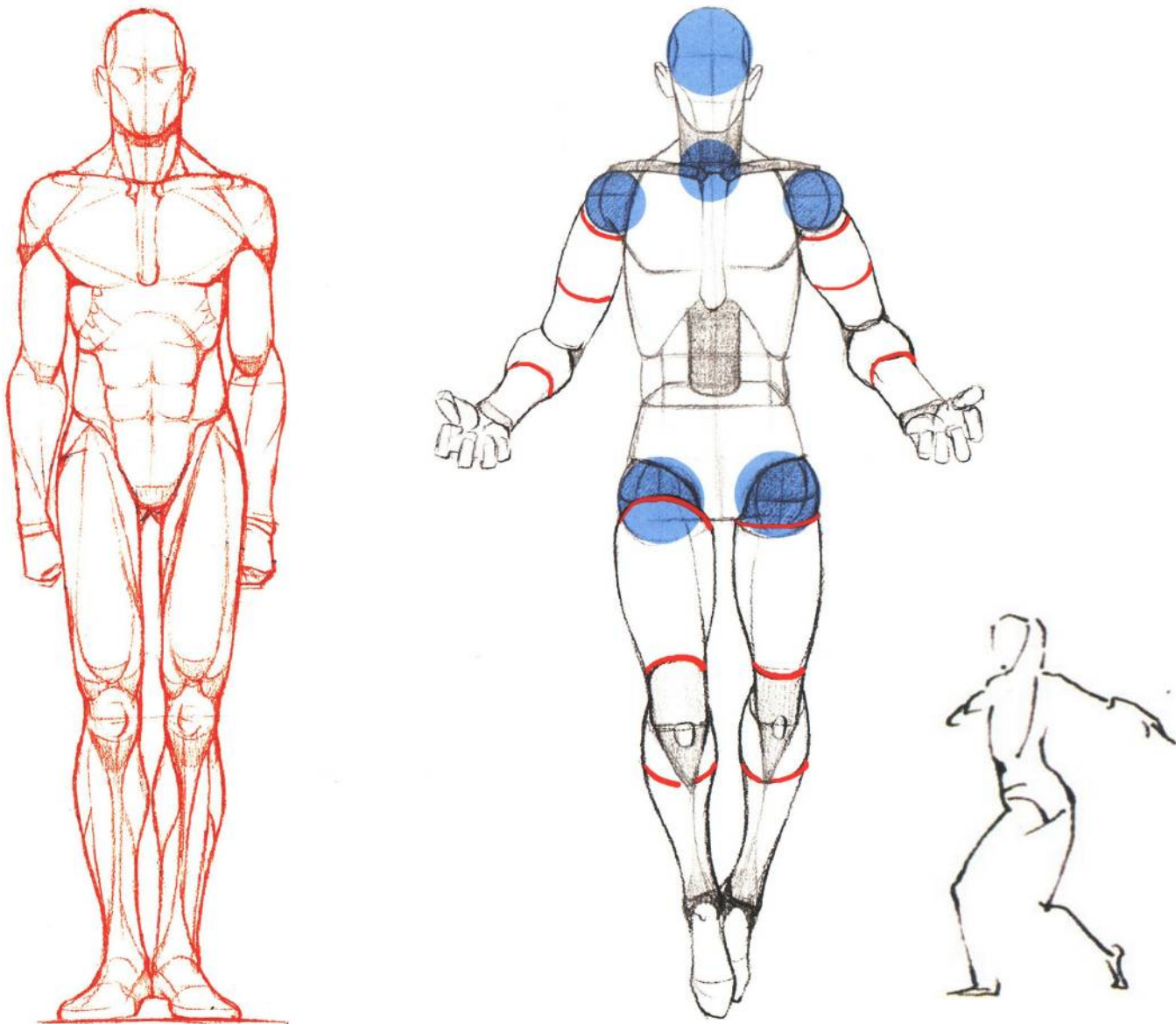
05 The relationship between muscles and joints

Muscles are like rubber bands on bones, and the human body can make different movements by squeezing and pulling them. To draw muscles well, you need to do the following three things.

1. Draw the bones well. Before you get to know the muscles, you must draw the skeleton first. By practicing three-view drawing, you can strictly control the proportion of the skeleton and express the state of the skeleton from different angles. By drawing the bones well before drawing the muscles, the human body will not be "collapsed".
2. Distinguish between the primary and secondary relationships of muscles. There are many muscles in the human body, so it is important not to draw every single one of them, otherwise the human body will look extremely unnatural. The reason why we need to understand the structure of muscles is to express a particular state of the human body. When practicing the three-view drawing of muscles, we can first focus on the muscle structure of the joints of the human body. When the human body is in motion, the muscles in the joints change very frequently, and mastering the drawing of these muscles is a very important part of a good muscle drawing.
3. Learn to summarize the muscles. In characterization, we often need to generalize the human body. Therefore, in addition to understanding the basic structure of muscles, we need to learn how to generalize them.

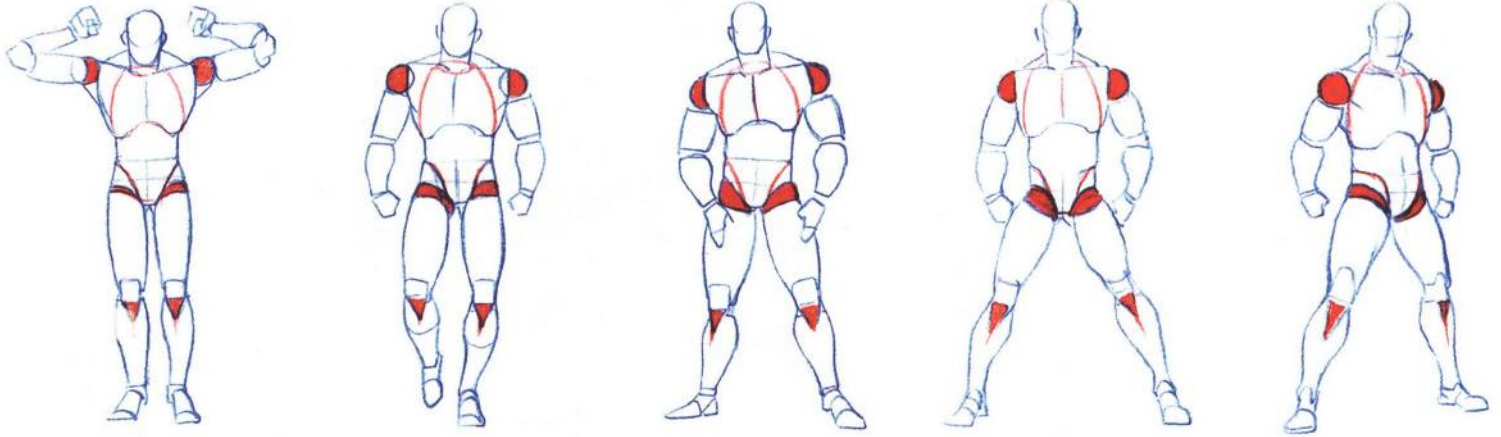


Most of the muscles in the human body pull or squeeze in response to joint movement. Of all the joints, we need to focus on the following three areas of the body:

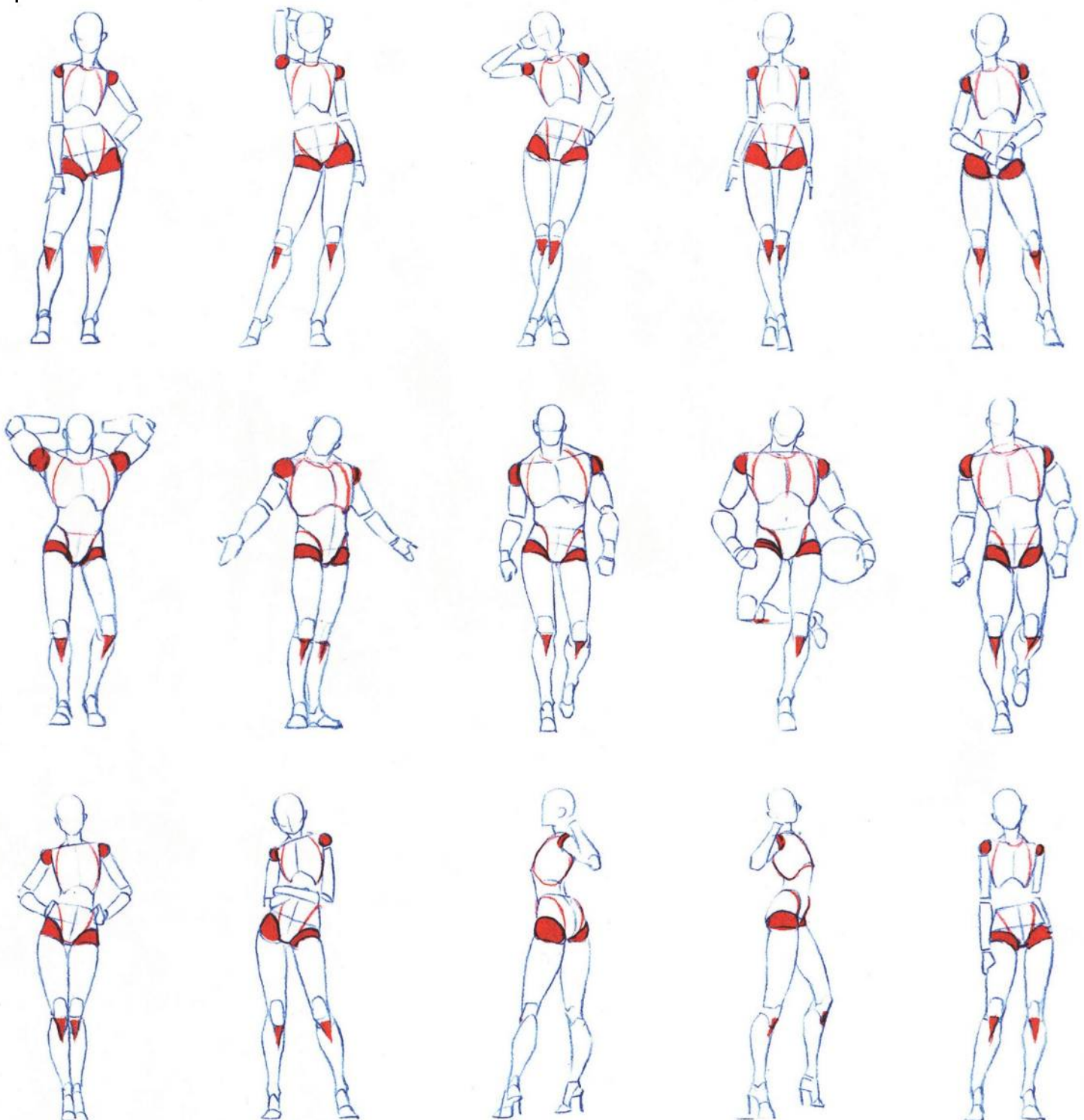


1. Spine. There are 33 vertebrae in the human body, but the cervical and lumbar vertebrae move frequently, while the thoracic and coccygeal vertebrae do not bend as much during movement. When we study the structure of the spine, we need to pay more attention to the length of the neck and waist, because the spine only bends when it moves, and does not become longer or shorter.
2. Shoulders and hips. These two areas are the starting points of the limbs and the key areas for controlling the movement of the limbs. We can draw four spheres of different sizes in each of these areas to represent the joint balls that connect the limbs to the trunk. For a normal adult, the size of the shoulder spheres can be compared to the thickness of the neck, and the size of the crotch spheres can be compared to the size of the skull.
3. Limbs. The limbs are the most expressive part of the human body. The biggest difficulty in expressing the limbs is that the perspective should be reasonable, which requires us to have a certain understanding of the perspective of the cylinder, especially to control the curvature of the cylinder on the limbs, which is the key element that affects the length of the limbs in the picture.

When modeling the human body, we can first consider the proportionality of the surfaces.



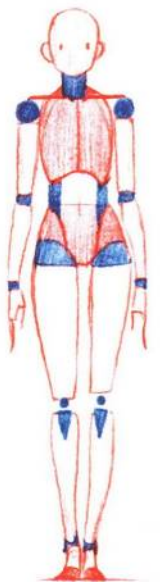
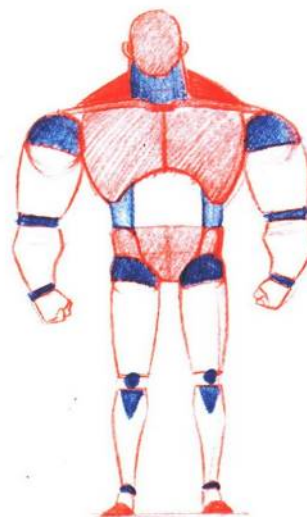
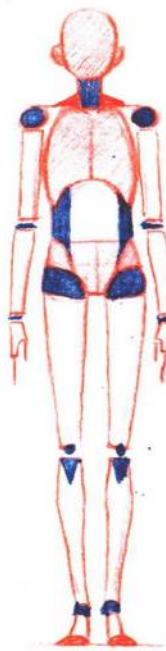
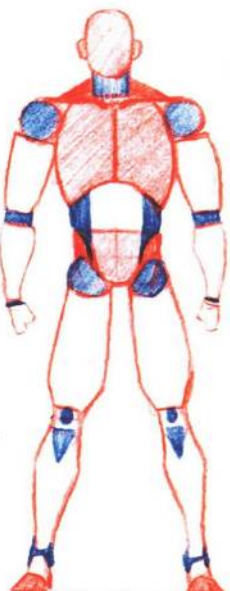
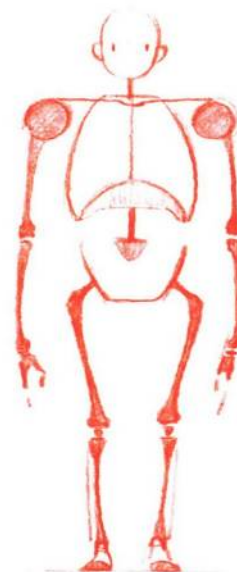
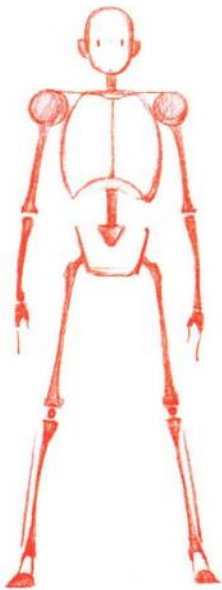
Then use the joints to connect the parts, so that the basic dynamics of the human body can be well expressed.

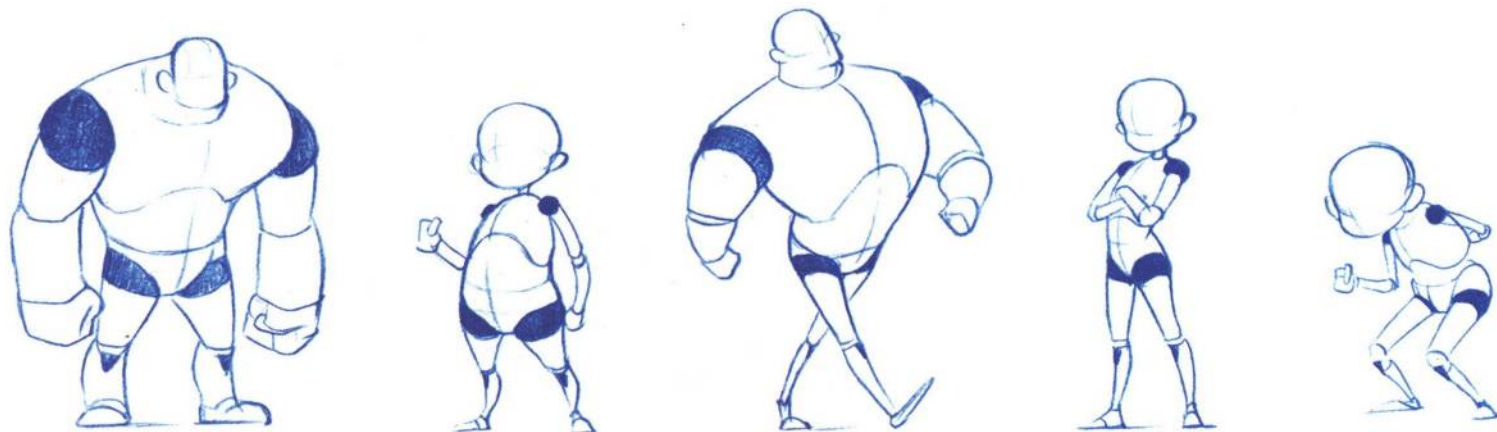


06 Proportioning of different characters

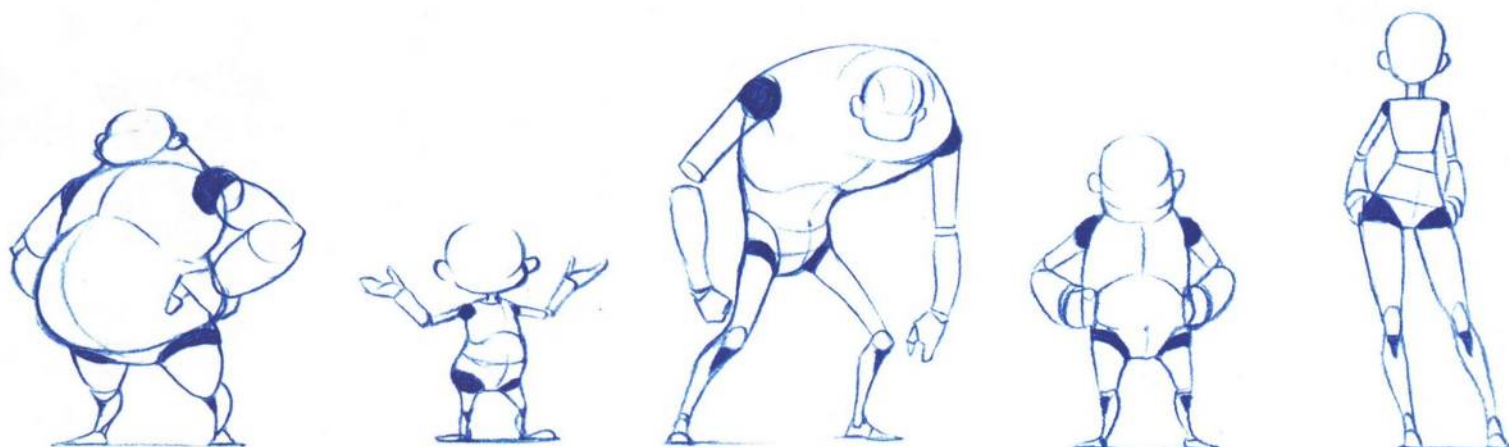
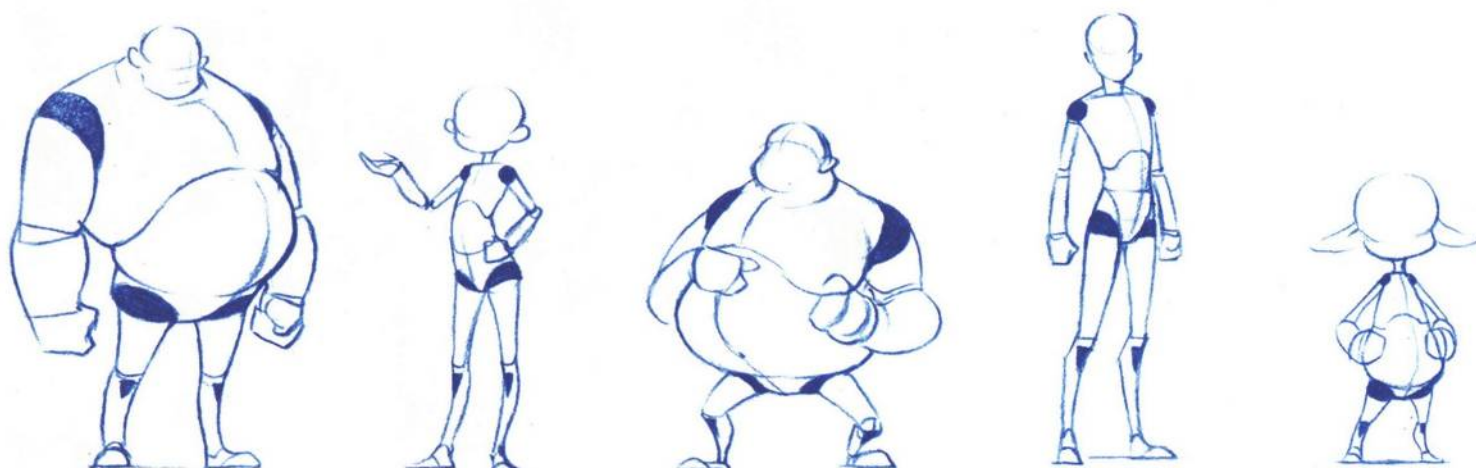
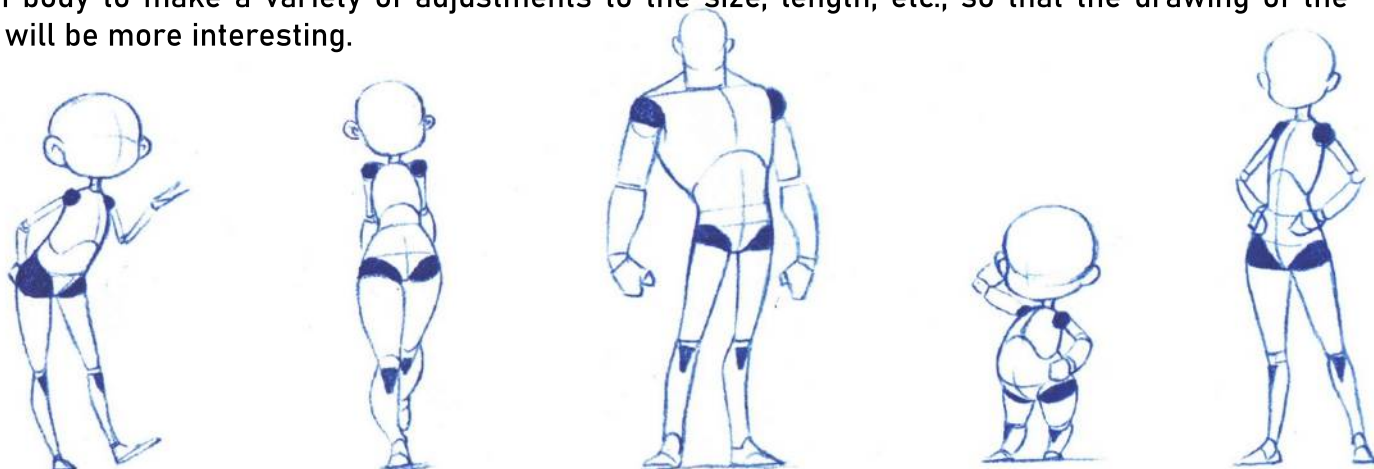
Before we draw the muscles of the human body, we must practice controlling the proportions of different figures. When we do this exercise, we can not arrange different poses for the characters first, the characters can stand straight and focus on the flat proportion control of the characters.

When modeling anime characters, we can control the size and length of each part of the character, so that we can better control the character as a whole.





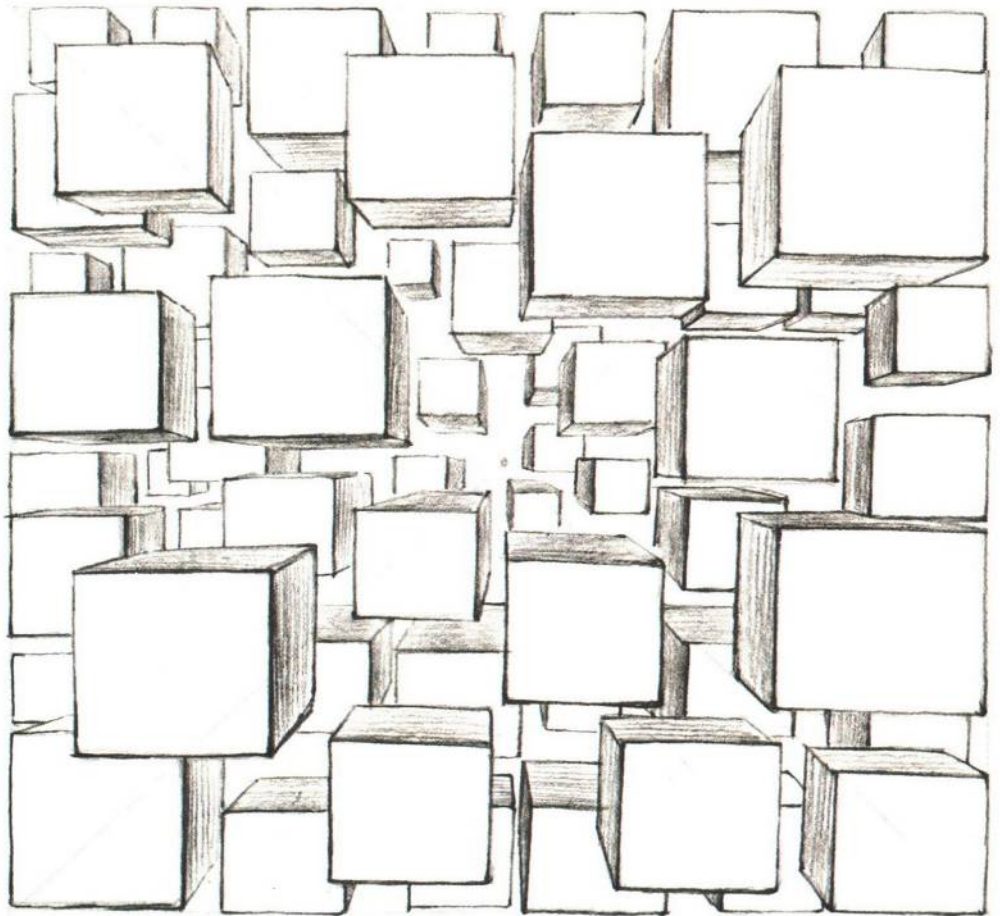
We can first think of the human body support is composed of a simple geometry, as long as the human body support to deal with the various joints, then we can make the torso and limbs of the human body to make a variety of adjustments to the size, length, etc., so that the drawing of the figure will be more interesting.



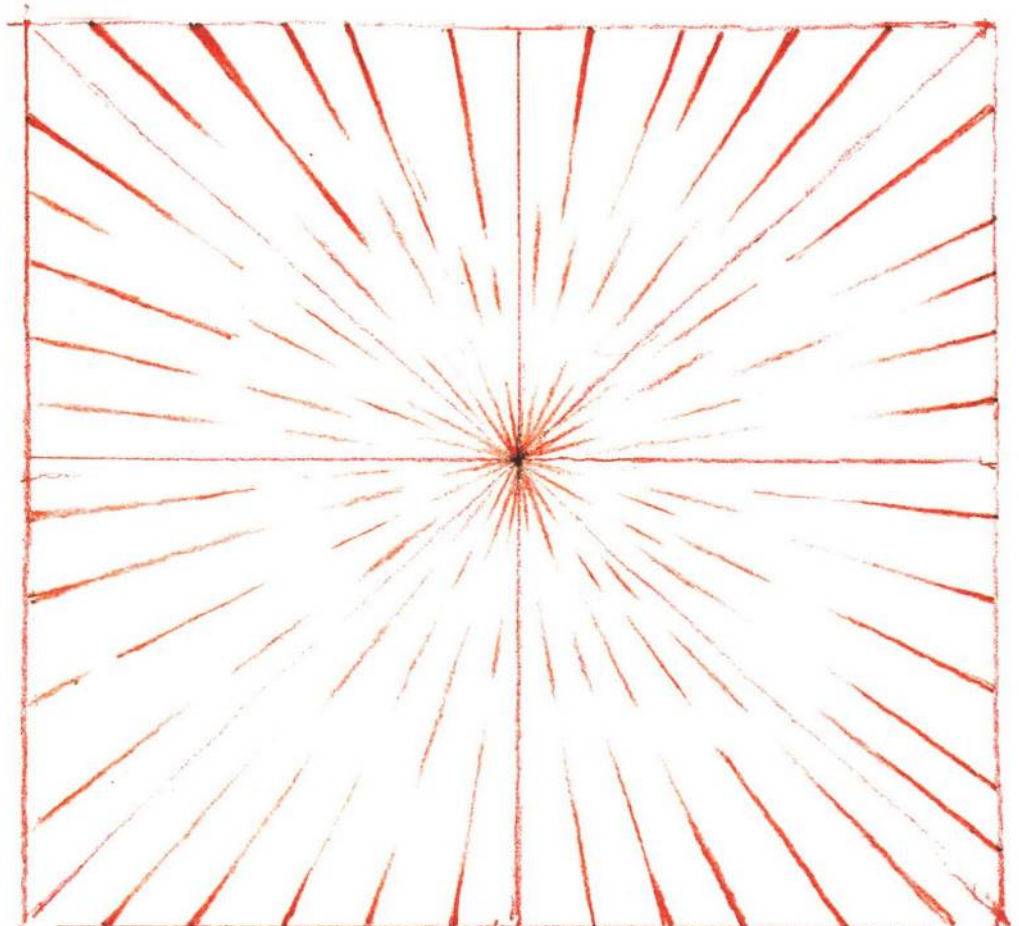
07 Geometric Perspective Exercises

Perspective is always present when drawing the human body. By learning about geometry, we can better understand the rules of perspective.

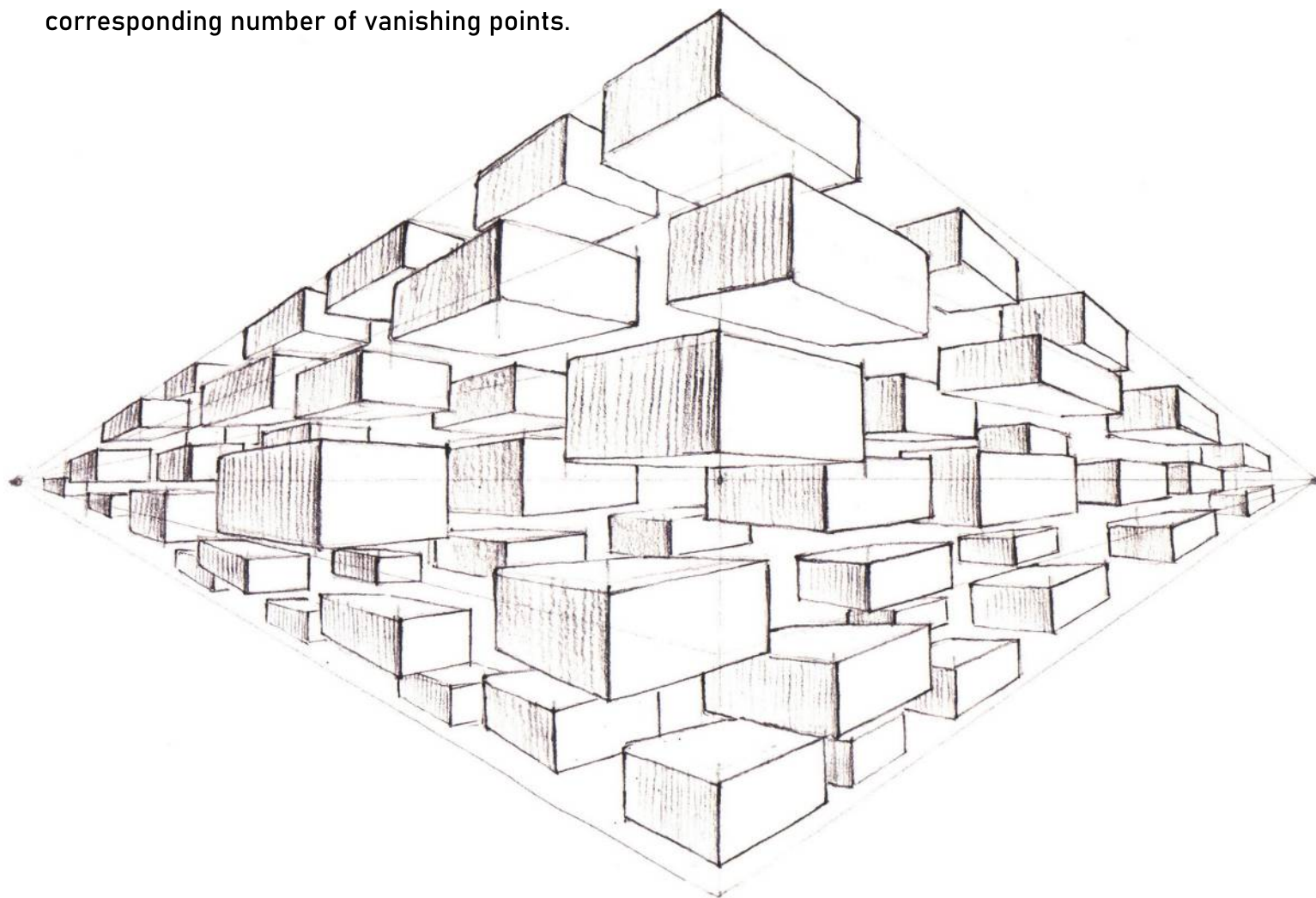
We can try the following exercises to improve our understanding of perspective.



This exercise can be done in the form of a hand drawing to improve our ability to control straight lines. To do this exercise, we can first use a ruler to draw a box, set a vanishing point, draw one or two reference lines, and then use the reference lines to guide us to draw a line that extends directly to the vanishing point.



By utilizing the vanishing points, we can quickly create three-dimensional shapes. One-point perspective, two-point perspective, and three-point perspective, as their names suggest, have a corresponding number of vanishing points.



In the case of drawing a cube, for example, it is important to utilize the reference line to show the perspective effect of each cube in order to improve the depth of the cube. When practicing two-point perspective, we should pay attention to the rule of near big and far small.

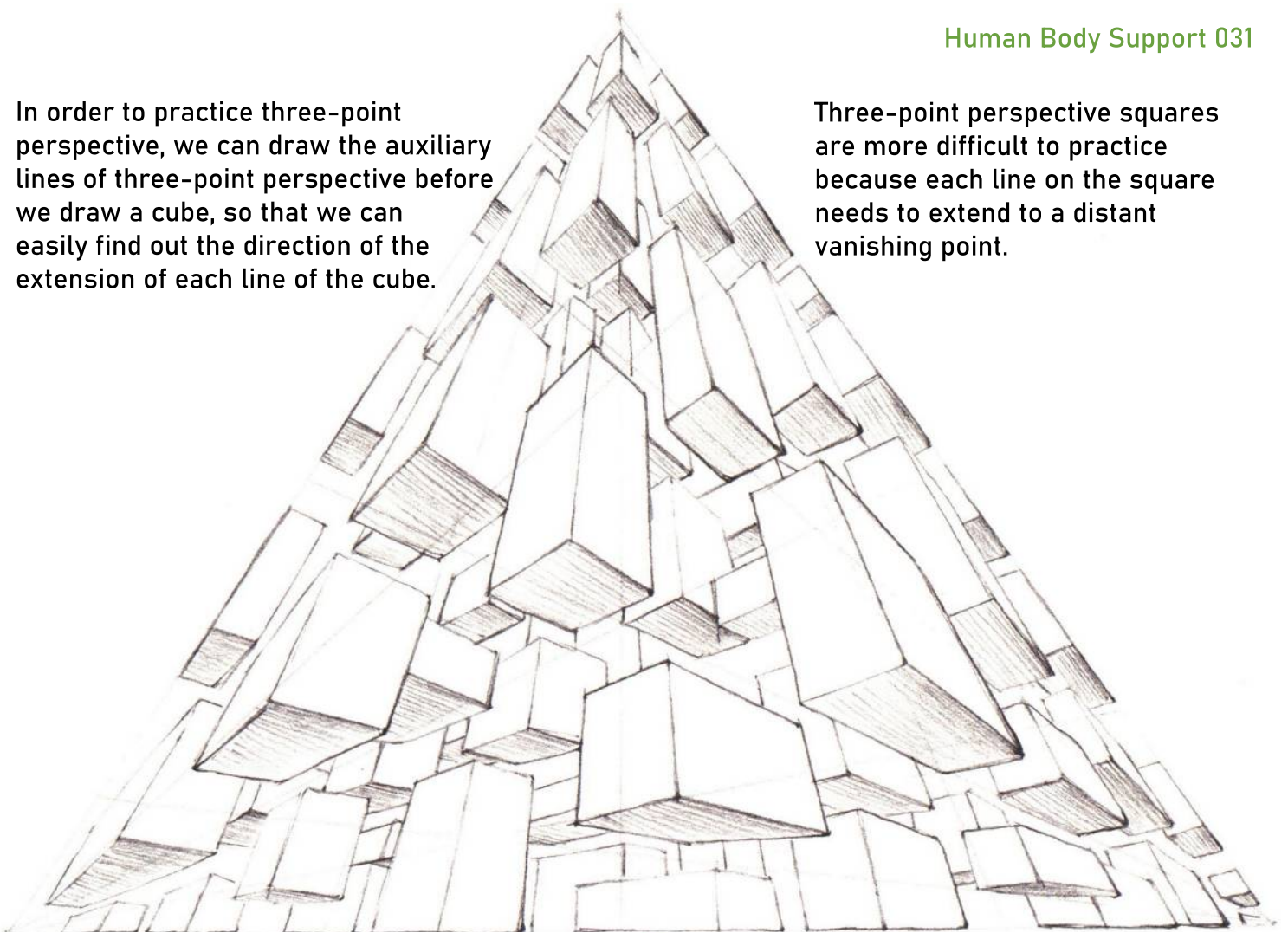


When doing perspective exercises, we can also try to use only a few single lines to show perspective effects. By controlling the length and density of the lines, simple single lines can also show the three-dimensional sense of space.

In some complex scenes, many objects are placed in a messy way, it is difficult to determine the disappearance point of a single object. At this time, we can control the proportion of the plane of the object and the position of the placement to show the effect of perspective.

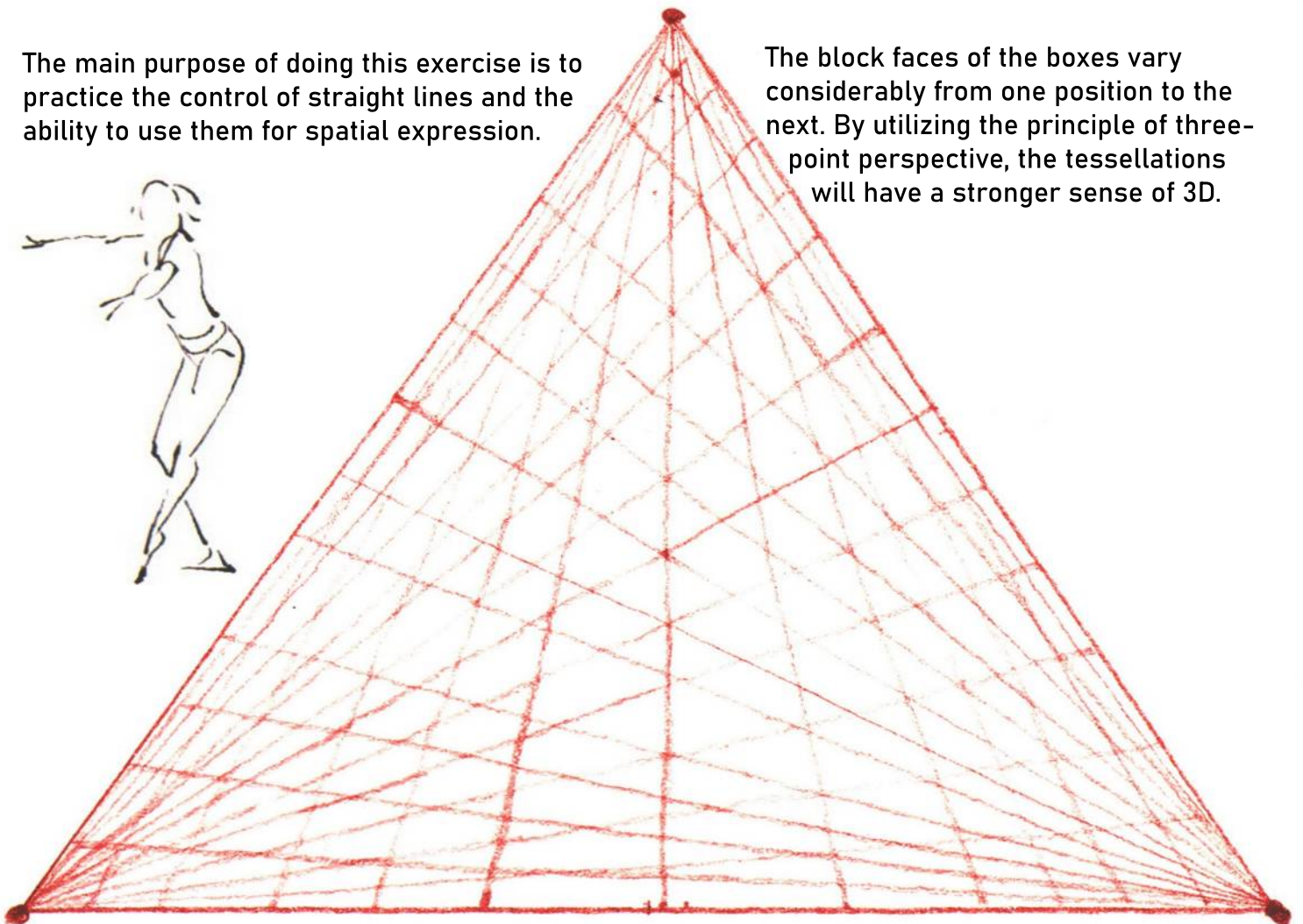
In order to practice three-point perspective, we can draw the auxiliary lines of three-point perspective before we draw a cube, so that we can easily find out the direction of the extension of each line of the cube.

Three-point perspective squares are more difficult to practice because each line on the square needs to extend to a distant vanishing point.

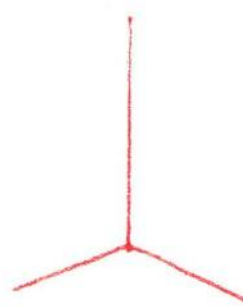
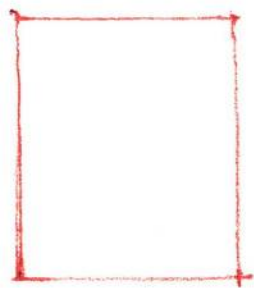


The main purpose of doing this exercise is to practice the control of straight lines and the ability to use them for spatial expression.

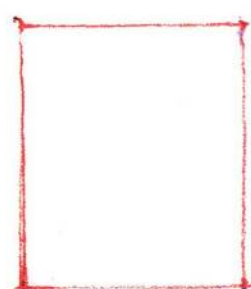
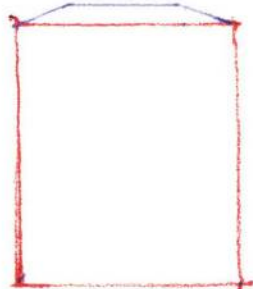
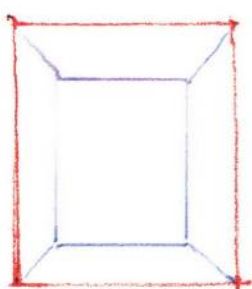
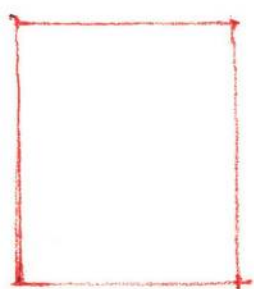
The block faces of the boxes vary considerably from one position to the next. By utilizing the principle of three-point perspective, the tessellations will have a stronger sense of 3D.



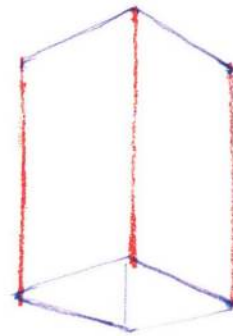
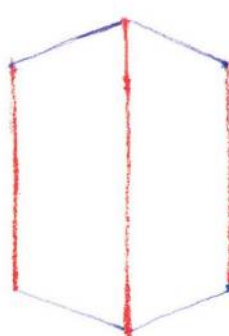
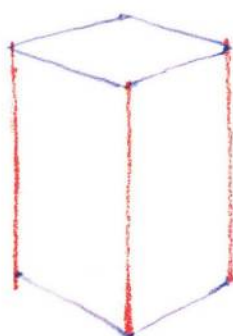
Doing perspective drawing is very helpful for developing spatial sense.



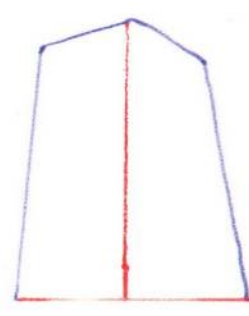
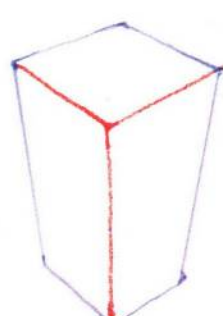
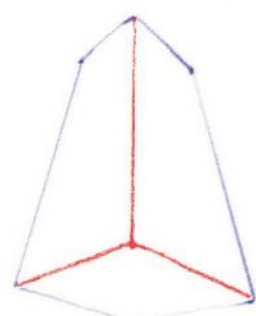
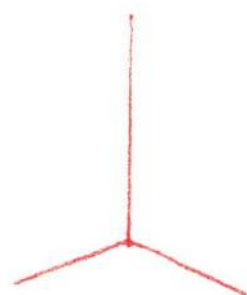
When practicing one-point, two-point, and three-point perspective squares, we can utilize the above three shapes to quickly draw squares with different perspective effects. To practice one-point perspective squares, we can first draw a parallelogram, then set a vanishing point around the perimeter of the parallelogram, and use this vanishing point to draw the thickness of the square. In this way, we can draw a one-point perspective cube from several different angles.



To practice two-point perspective squares, we first draw three vertical parallel lines, then mark two vanishing points, and use the vanishing points to shape the thickness of the cube. In this way, we can quickly create two-point perspective squares from many different angles.



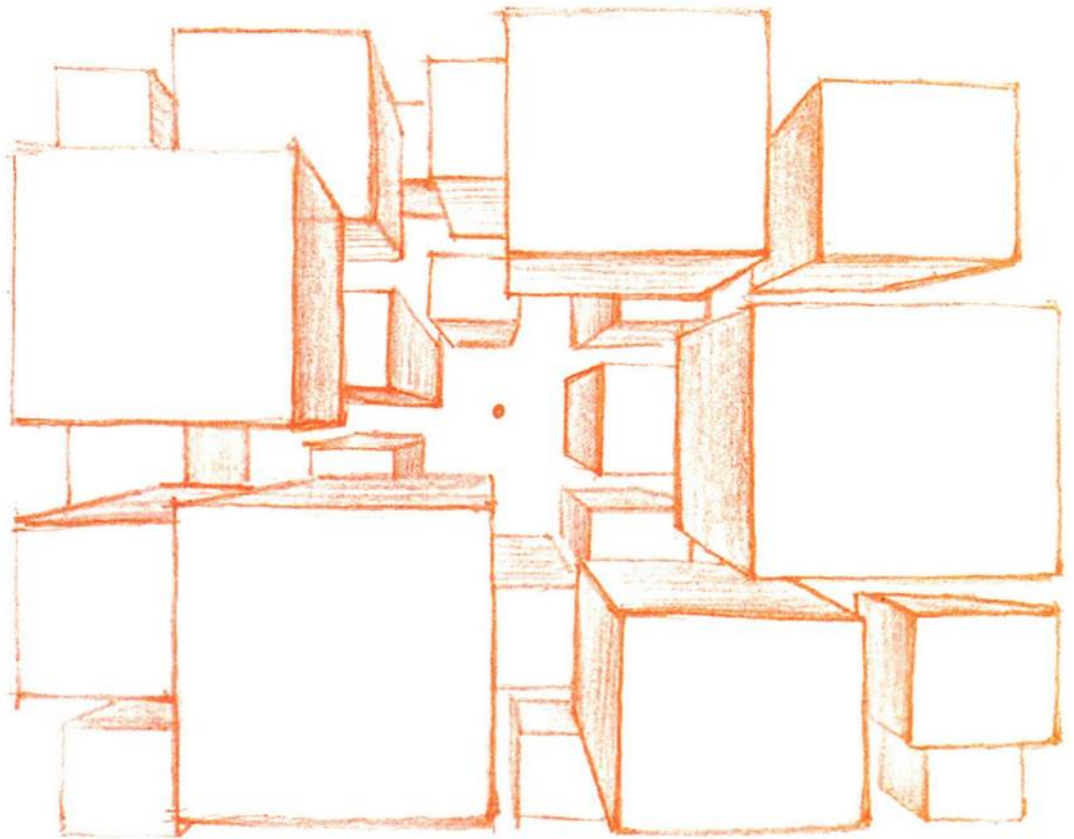
For three-point perspective squares, we should first draw a triangle with each line pointing in the direction of the vanishing point. By using the vanishing point as a guide, we can quickly draw three-point perspective squares with many different angles.



The next step is to explain how to use the square body to shape the structure of the human body. When drawing a character, we first face the problem of composition, which is a relatively flat perception. When we draw the human body, we often pay attention to the details of the human body, but seldom pay attention to the relationship of the human body as a whole. Therefore, in order to draw a good figure, we need to get into the habit of simplifying the figure.

Everything in the picture can be disassembled graphically.

Even if the space looks complicated, we can utilize the size and spacing of the figures to try to express the regularity of the space.

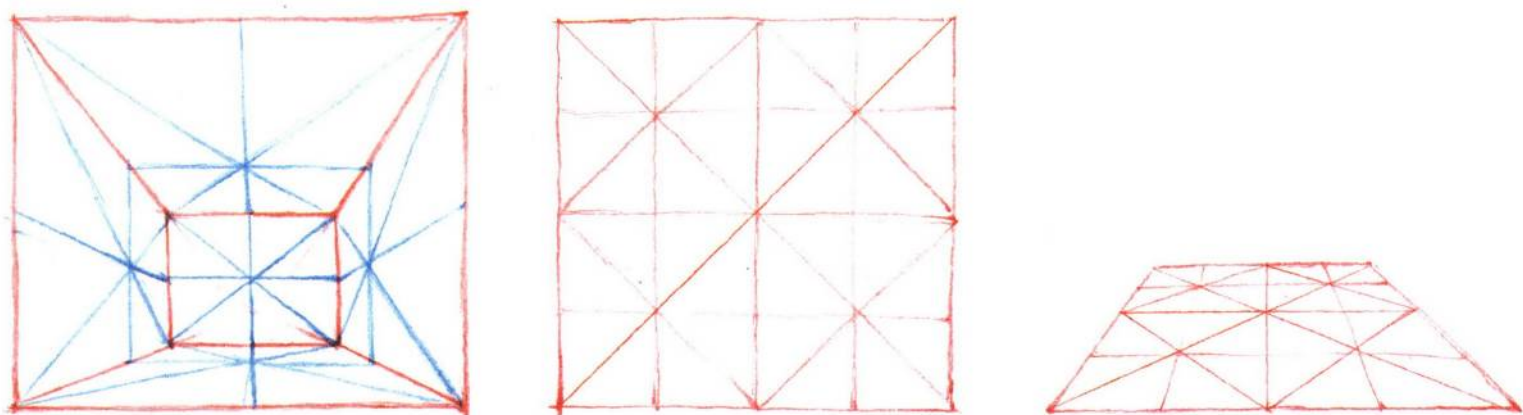


The same applies to the human body. As long as we can break down the human body, emphasize its size in the picture, and then express its spatial relationship in the key parts of the picture, we can draw the human body very quickly.



034 Human Anatomy for Artist 人体结构原理与绘画教学

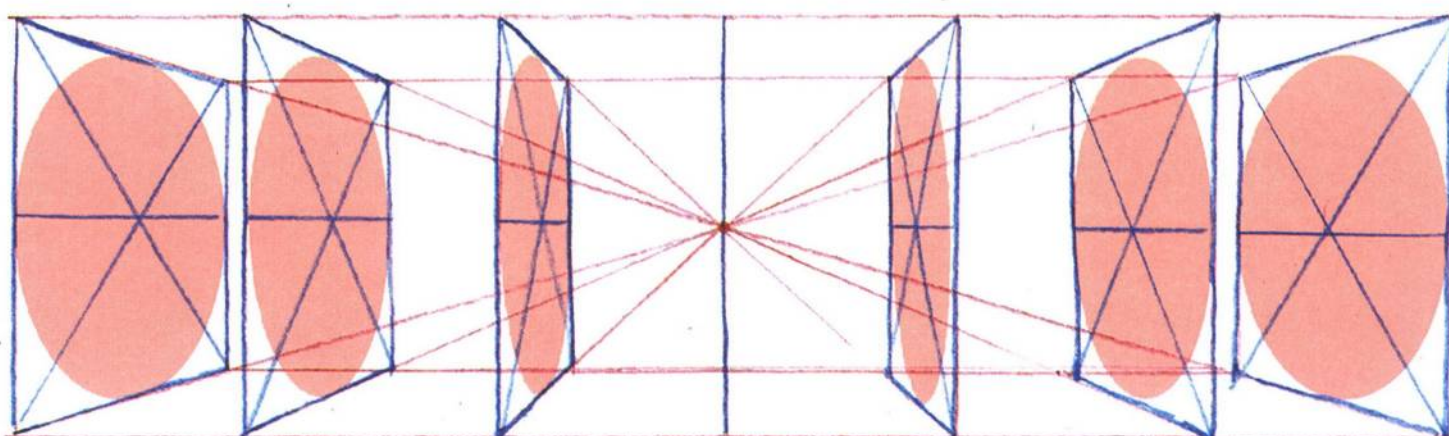
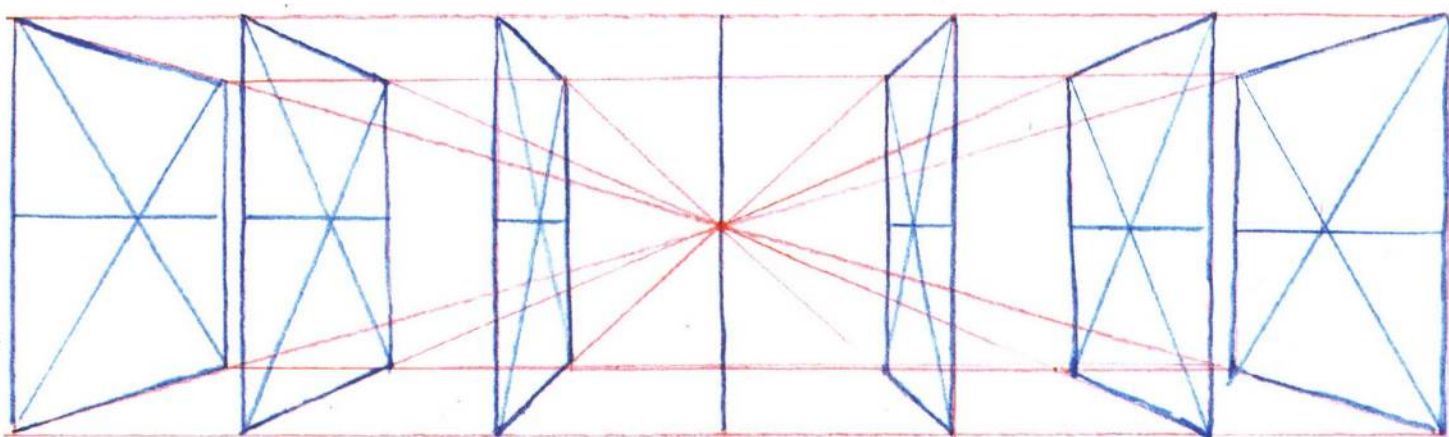
When doing perspective exercises, we can mark some symbols on each surface in space, for example, marking an "M" on a plane according to the principle of finding the center of the diagonal of a parallelogram. When the state of the plane changes in perspective, the "meter" on the plane will also change.



The following exercises will improve our ability to perceive perspective on a plane. Using the principle of one-point perspective, draw seven faces that extend into the distance. Each of these seven surfaces has a different state in different spatial locations, and the symbols on the surfaces will change.

This spatial relationship also exists in the human body. When we make a horizontal cross-section of the human body, the relationship of these surfaces will appear.

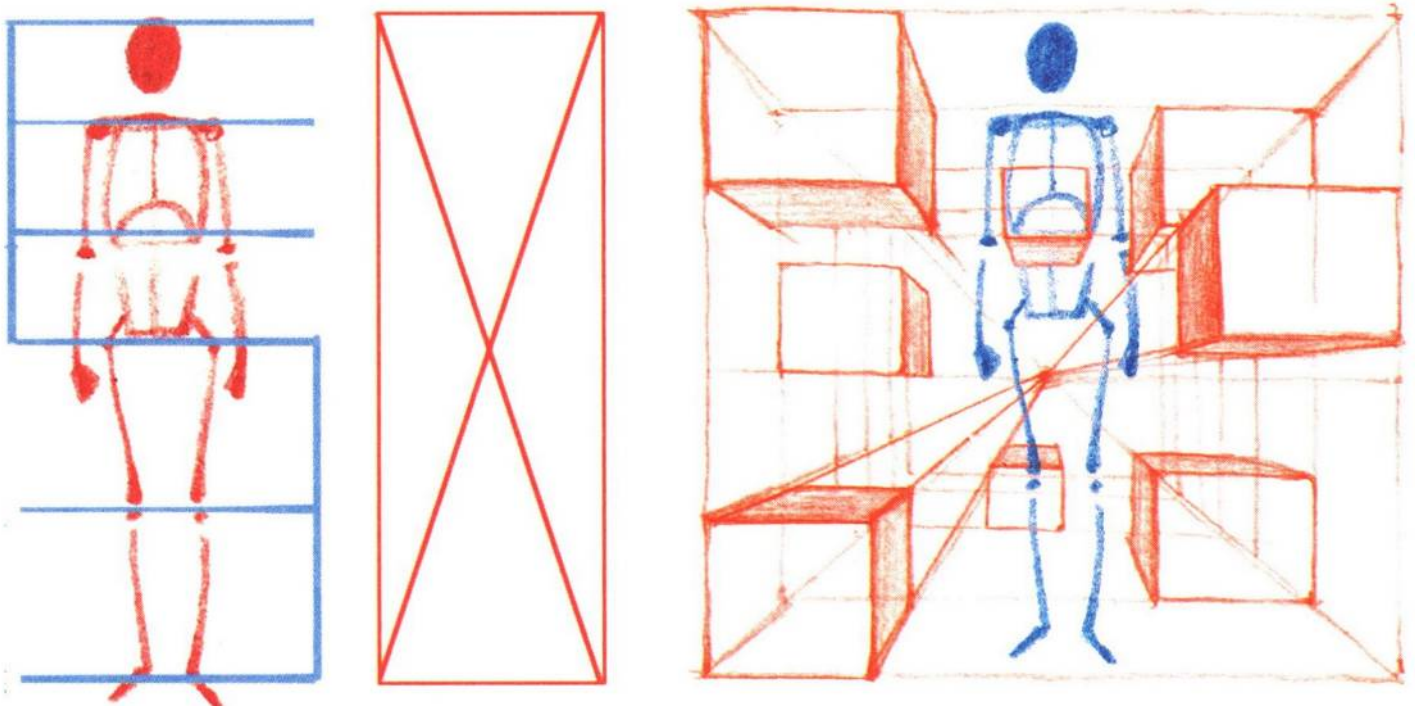
The cross-section of the human body is rounded, and the curvature of the edge of the circle varies in different perspective states.



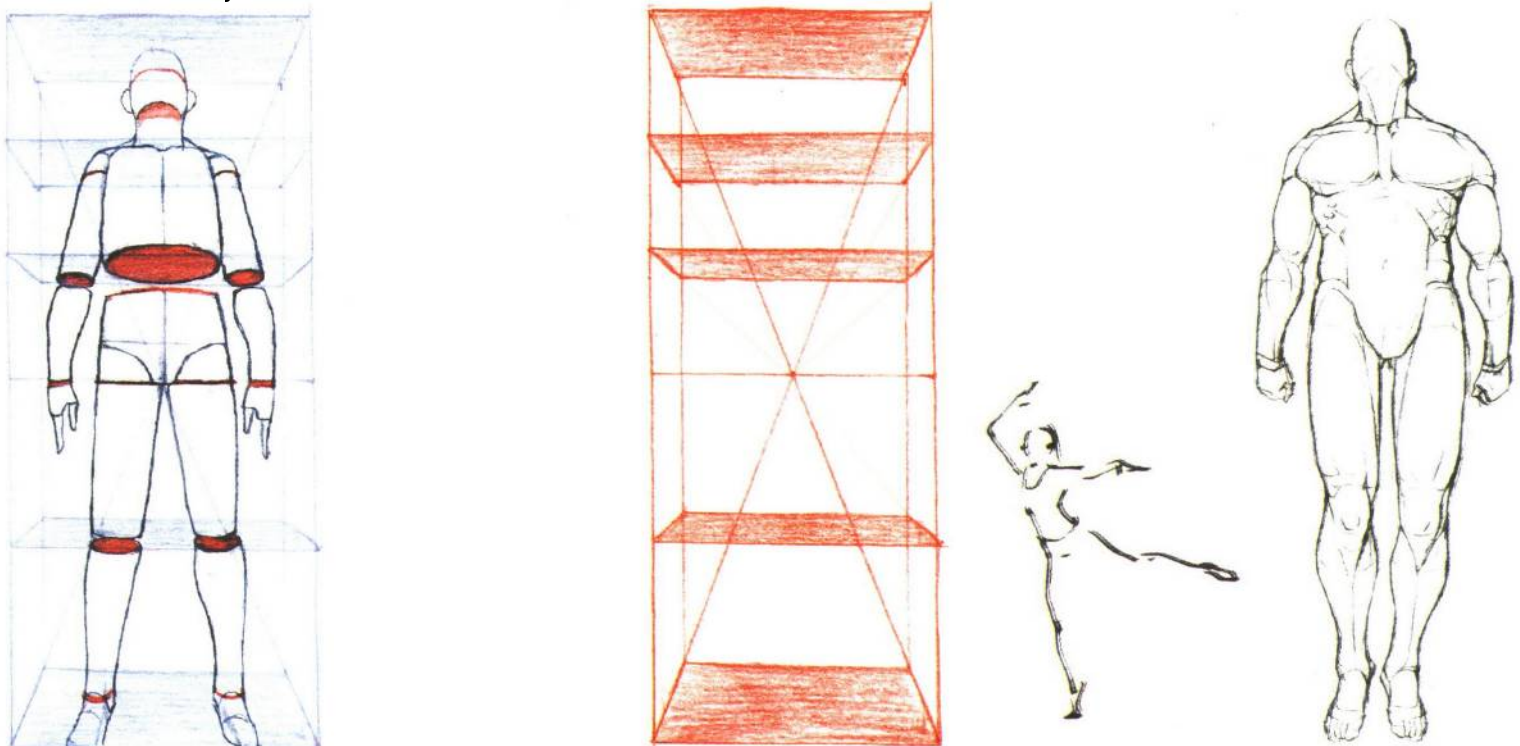
08 How to shape the human body using a square body

The human body is very flexible and can perform many movements. When you first start to practice the cross-section of the human body, it is recommended that you draw a straight standing person first, so that we can use the perspective of the cube as a reference.

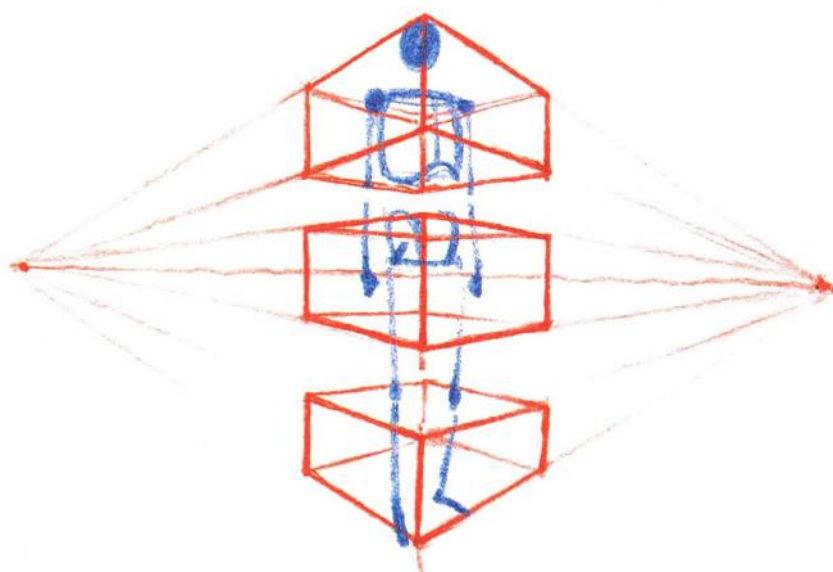
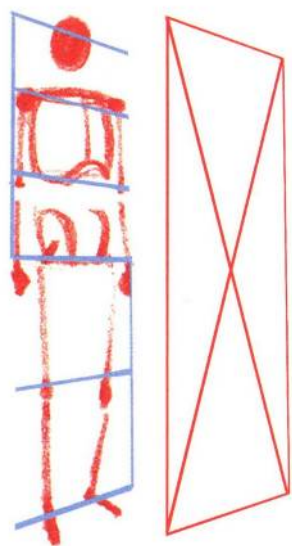
The cross-section of the human body mainly focuses on six positions, namely, the top of the head, the shoulders, the waist, the hips, the knees, and the soles of the feet. These six positions are the parts of the human body that have a relatively large range of motion.



When practicing the one-point perspective cross-section, we can imagine that the person is put in a one-point perspective box, and the curvature of the human body cross-section will change with the change of the box cross-section. In one-point perspective, the cross-section of the human body disappears into a single point, the form is flat, and the proportions do not change greatly, which makes it easy to illustrate the characterization.

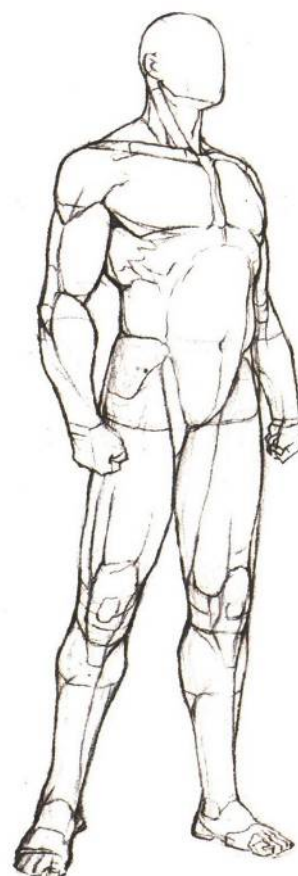
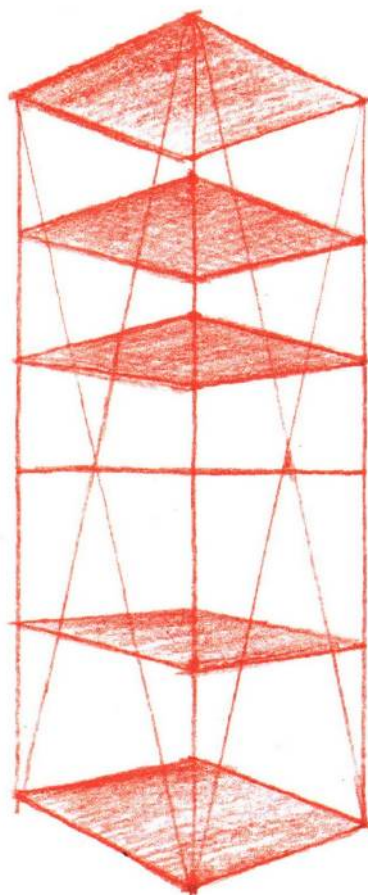
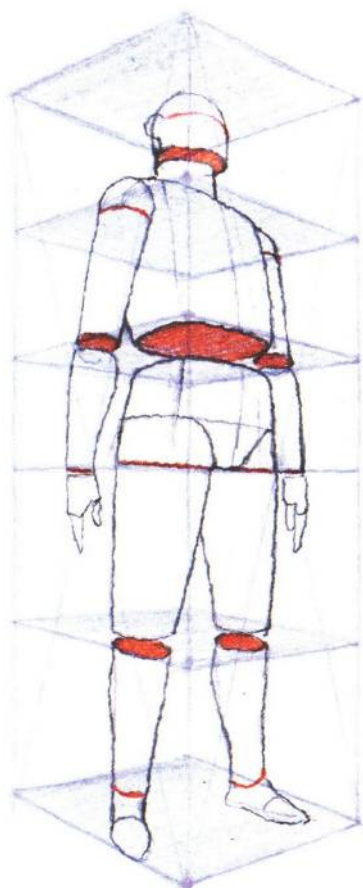


When drawing perspective, we should pay attention to the fact that the cross-section of the human body in different positions will have certain changes in the state. In the process of drawing a matchmaker, it is difficult to feel the form of the matchmaker because the cross-section of the matchmaker is not shown in the drawing.

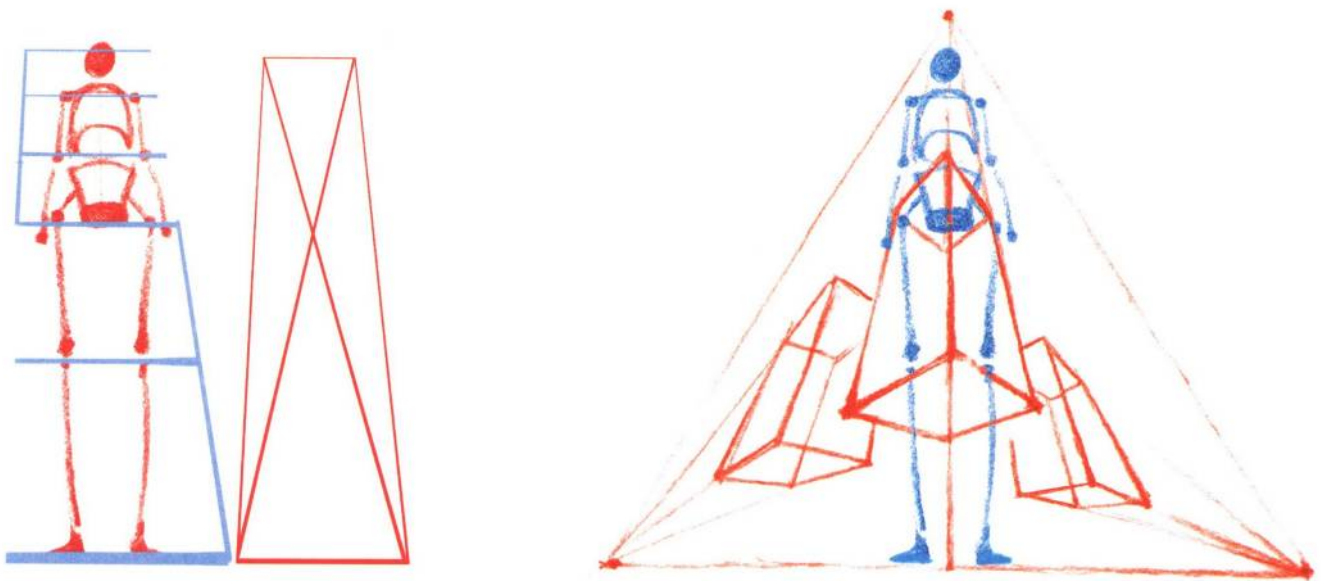


When we do the two-point perspective cross-section exercise, we can see the side of the human body, in this case, we need to pay attention to show the perspective of the limbs, and control the length of the limbs.

When drawing the human body in the "box", we should make good use of the proportional division of the "box", dividing the upper half of the human body into three equal parts and the lower half into two equal parts. When using this method of division in different perspectives, we need to flexibly control the proportion according to the law of near big and far small. The two-point perspective of the human body can better match the scene and shape the spatial relationship.

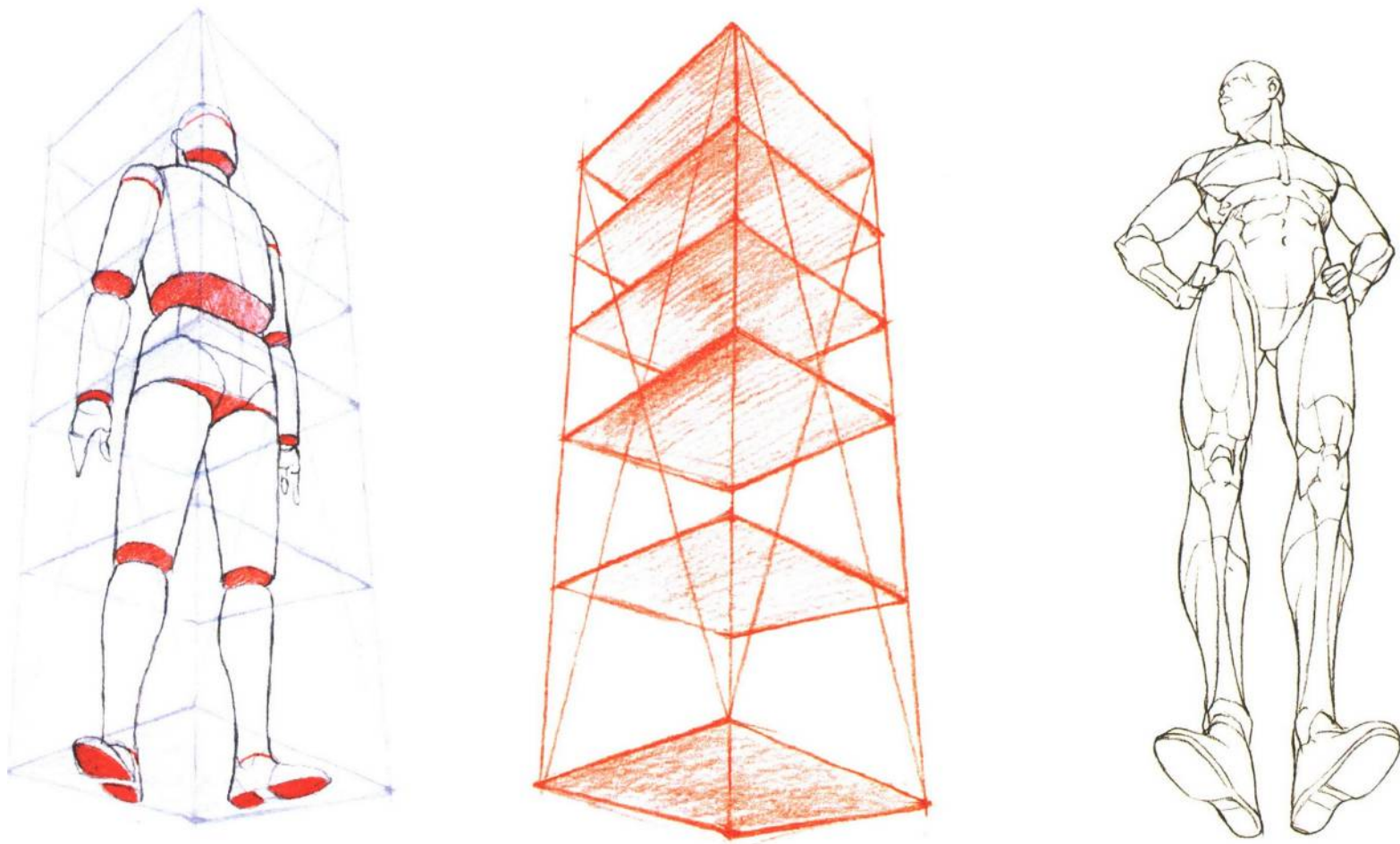


When drawing the human body in three-point perspective, the proportion of the human body will be more difficult to control.

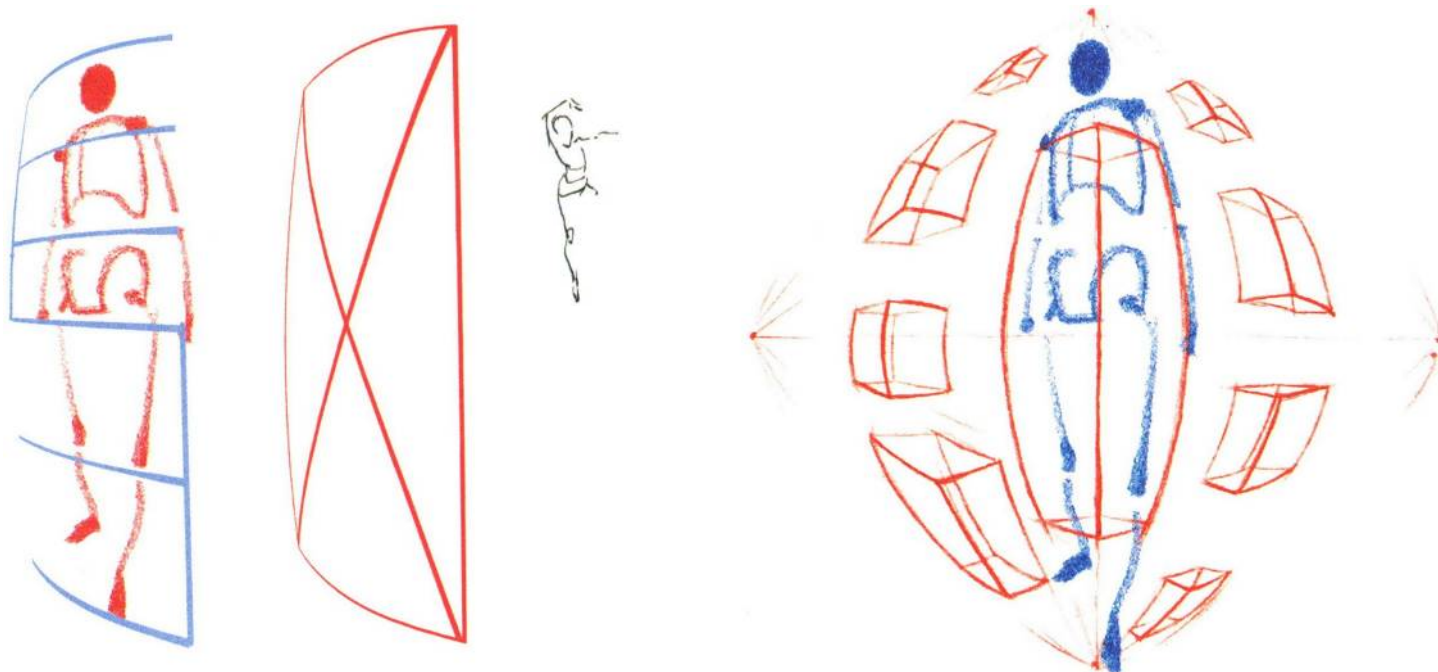


We can first analyze the perspective of a cross-section of the human body, use diagonal lines to find the center of the surface, divide the surface into two equal parts, then divide the upper body into three equal parts, and divide the lower body into two equal parts. When dividing the body, you should pay attention to the relationship between the near and the big, and the far and the small. It is easy to create a large perspective on the human body on this basis.

The three-point perspective of the human body is like a building, and often presents a state of looking up or down, which gives a strong sense of space. The above exercises can help us better understand the law of human scale, and use the cross-section of different parts of the human body to shape the human body.

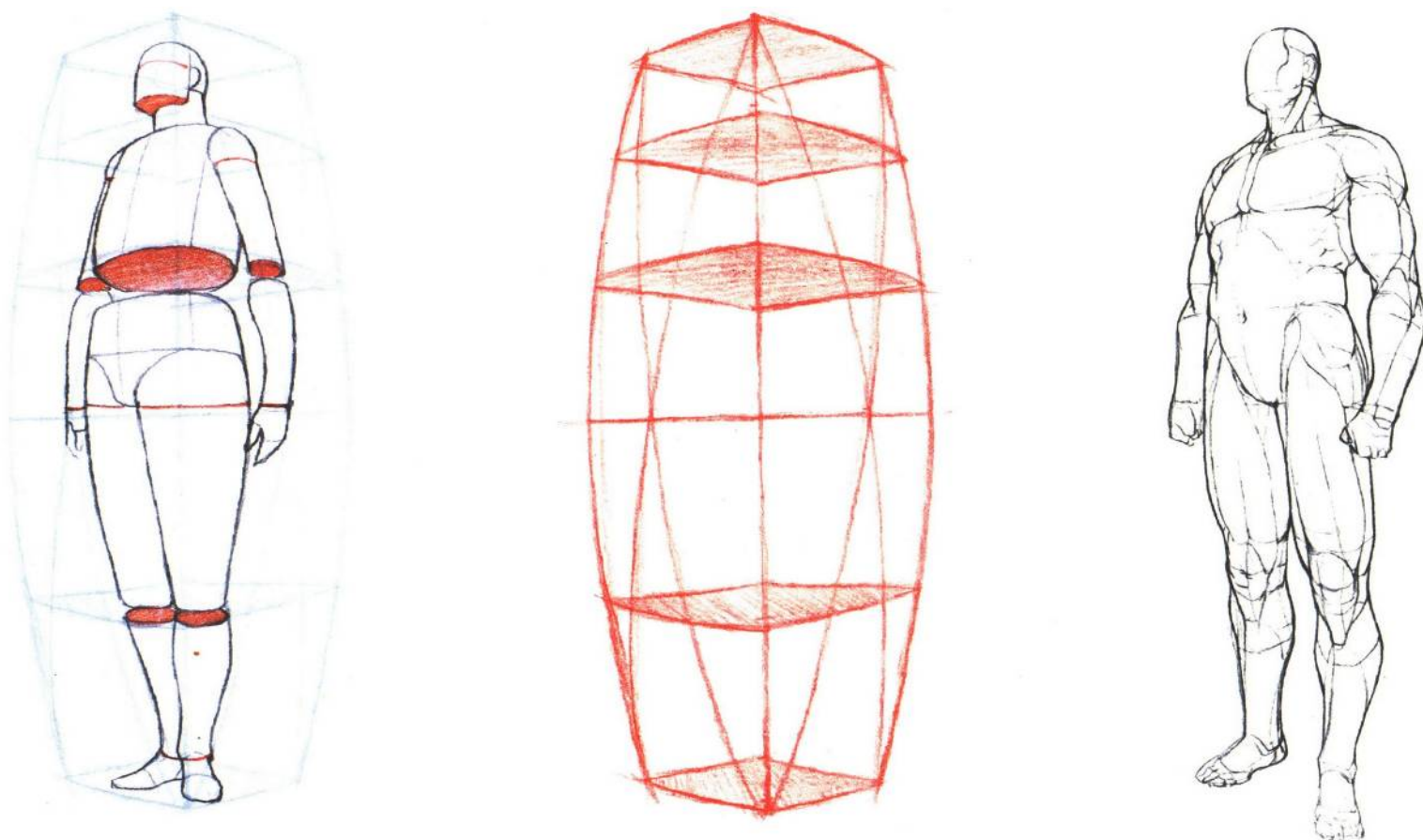


4P perspective has four vanishing points at the top, bottom, left and right. The center of vision and the horizontal line are lines, and the rest of the lines are arcs and extend to the two opposite vanishing points, which are somewhat similar to the latitude and longitude lines on the globe.

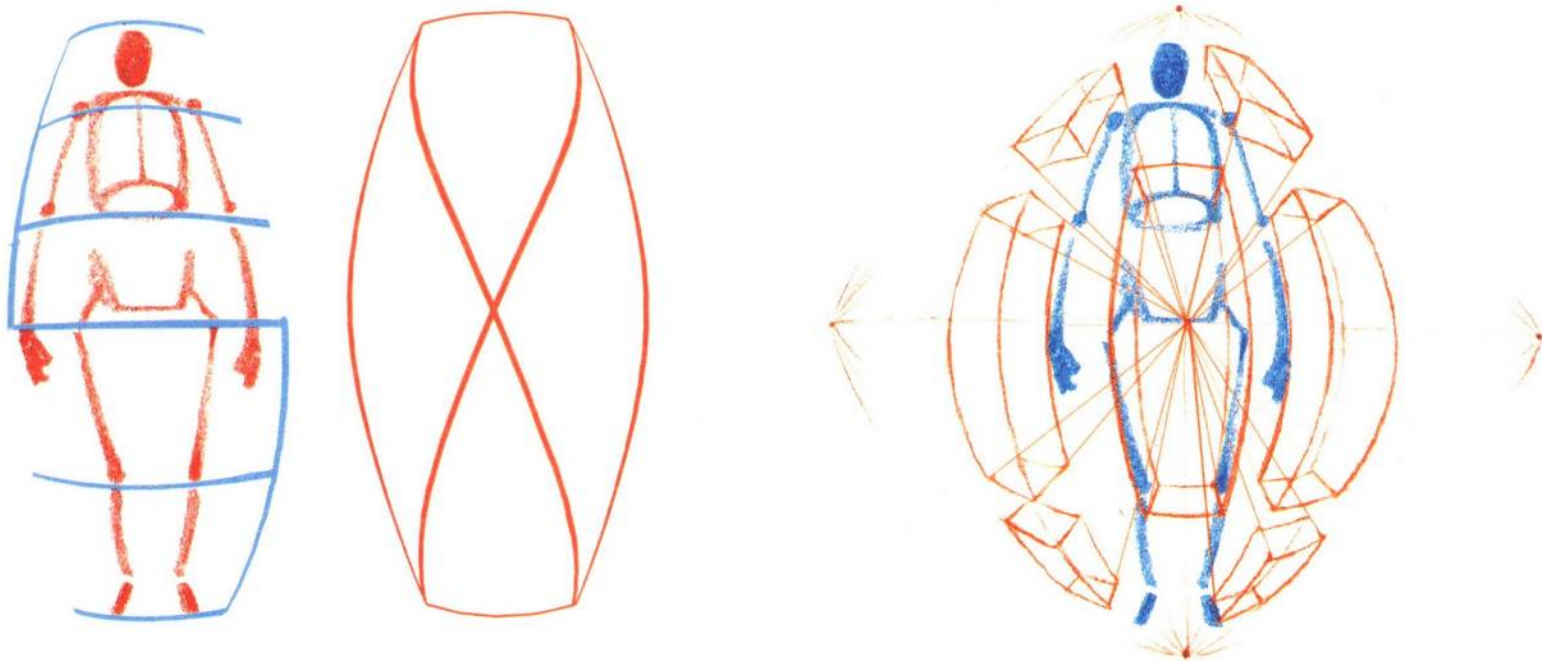


These reference lines are similar to the latitude and longitude lines on a globe. In this perspective, the proportion of the human body and the relationship between the planes will be affected. The four-point perspective of the cube is like a blown-up balloon, and the human body, when mounted in such a cube, looks like it has been blown up. The closer the human body is to the center of vision, the fuller the crosshairs appear, and the larger the body appears.

This kind of perspective is difficult to see under normal circumstances, and is often seen in photographs taken with specific lenses.

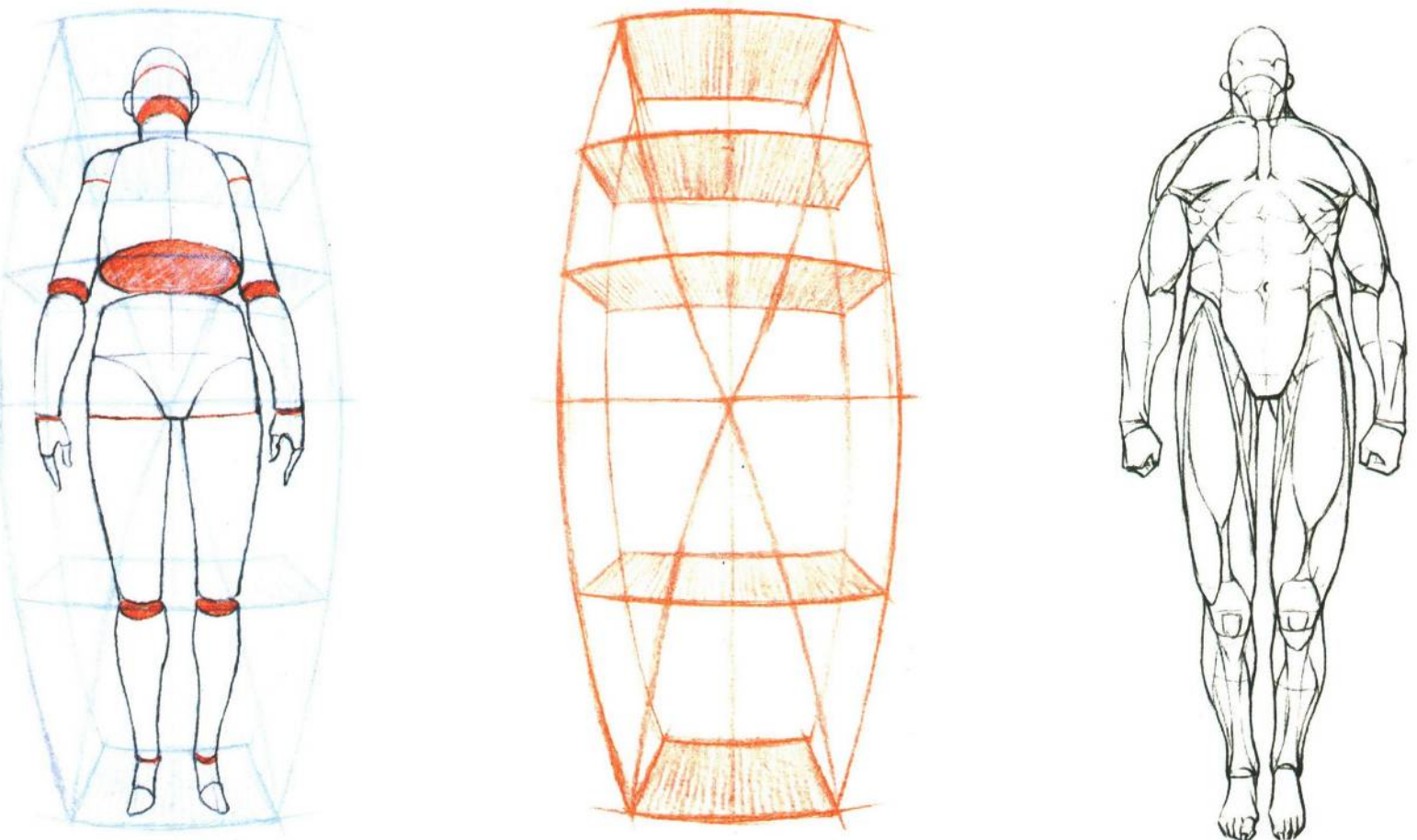


Five-point perspective, also known as fish-eye perspective, has five vanishing points at the top, bottom, left, right, and center of vision. The five-point perspective makes the human body look like a giant and gives people a strong sense of oppression.



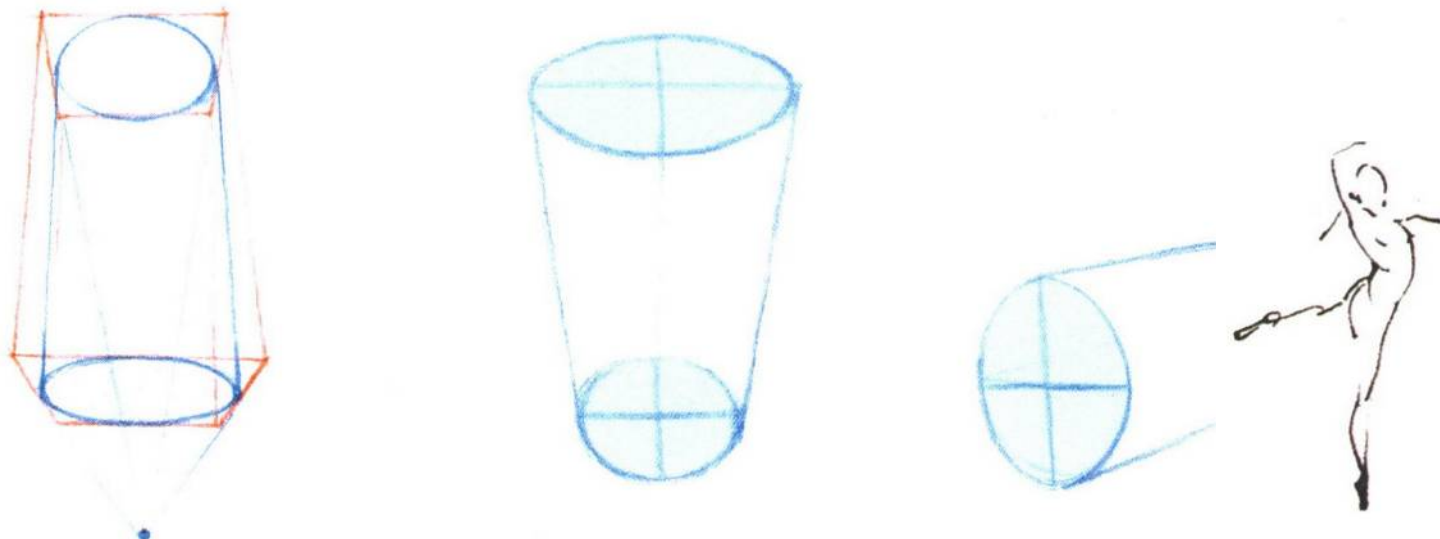
Five-point perspective and four-point perspective are close to the principle of perspective, but there is one more vanishing point extending to the center of vision, and the line extending to the center of vision is a straight line. Perspective is a more rigorous subject, involving a wide range of areas, I only selected a small part of the knowledge to do the explanation, the main purpose is to let you better understand the relationship between the block and the human body support.

When we learn to draw the human body, we can't just learn the structure of bones or muscles, but also understand and utilize the human body support, in order to draw more interesting bodies.

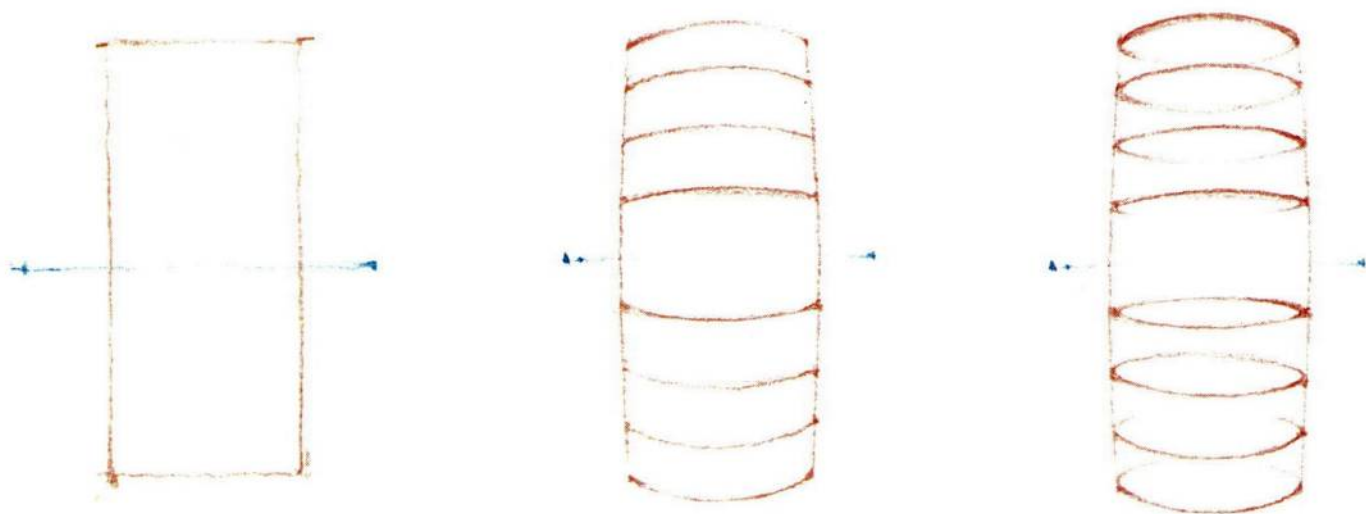


09 The relationship between the cylinder and the human body

The human body in the different perspectives described earlier is upright. If we want to show how the human body moves in different perspectives, we need to shift our attention to the cylinder and learn to utilize the cylinder's twisting motion to show the human body in different dynamics.

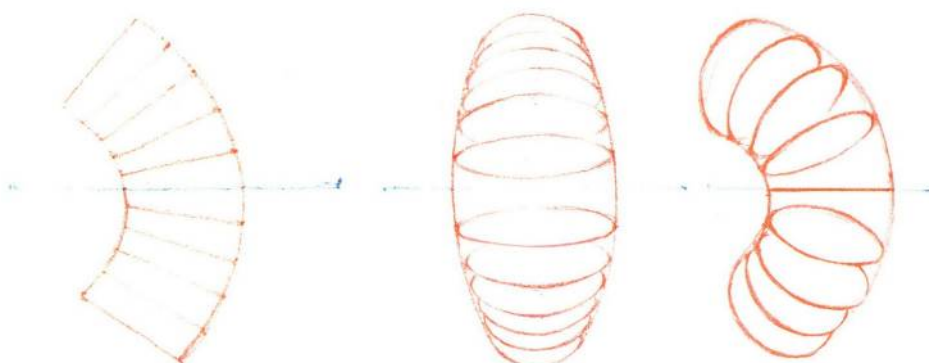


When drawing a cylinder, the main points to draw are the cylinder's circumferential surface and the edge line. The cylinder's facets change as the position of the cylinder's cut surface changes, and the edge lines scale as well. The proportions and curvatures of the figure are very similar to cylinder.



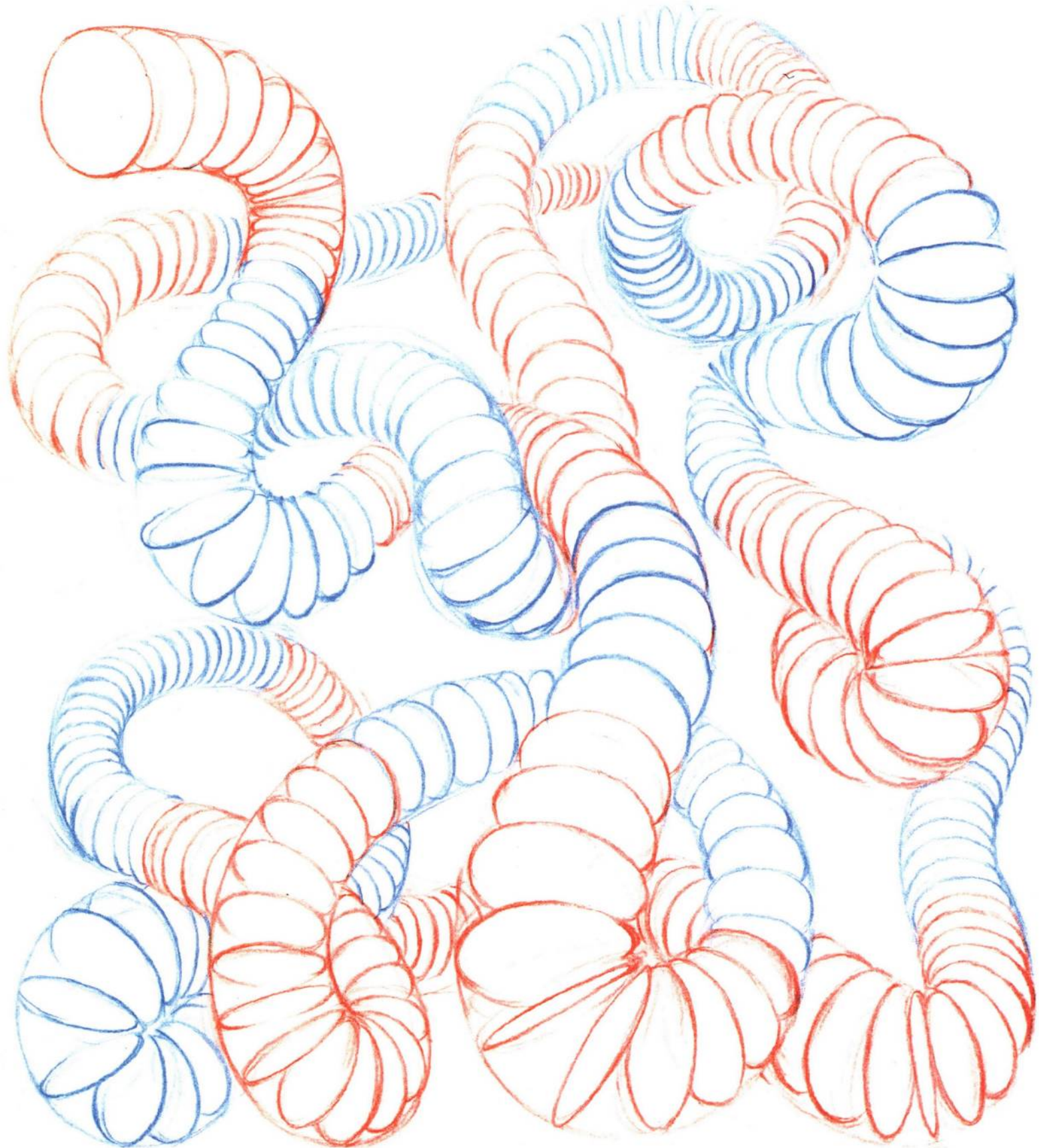
When the human body is in motion, we can think of it as a tube, and as the tube twists, the top surface of the cross-section and the edge lines change dramatically.

When drawing a twisting tube, it is important to control the spacing of each cross-section of the tube, with the extruded side having a smaller spacing and the pulled side having a larger spacing.



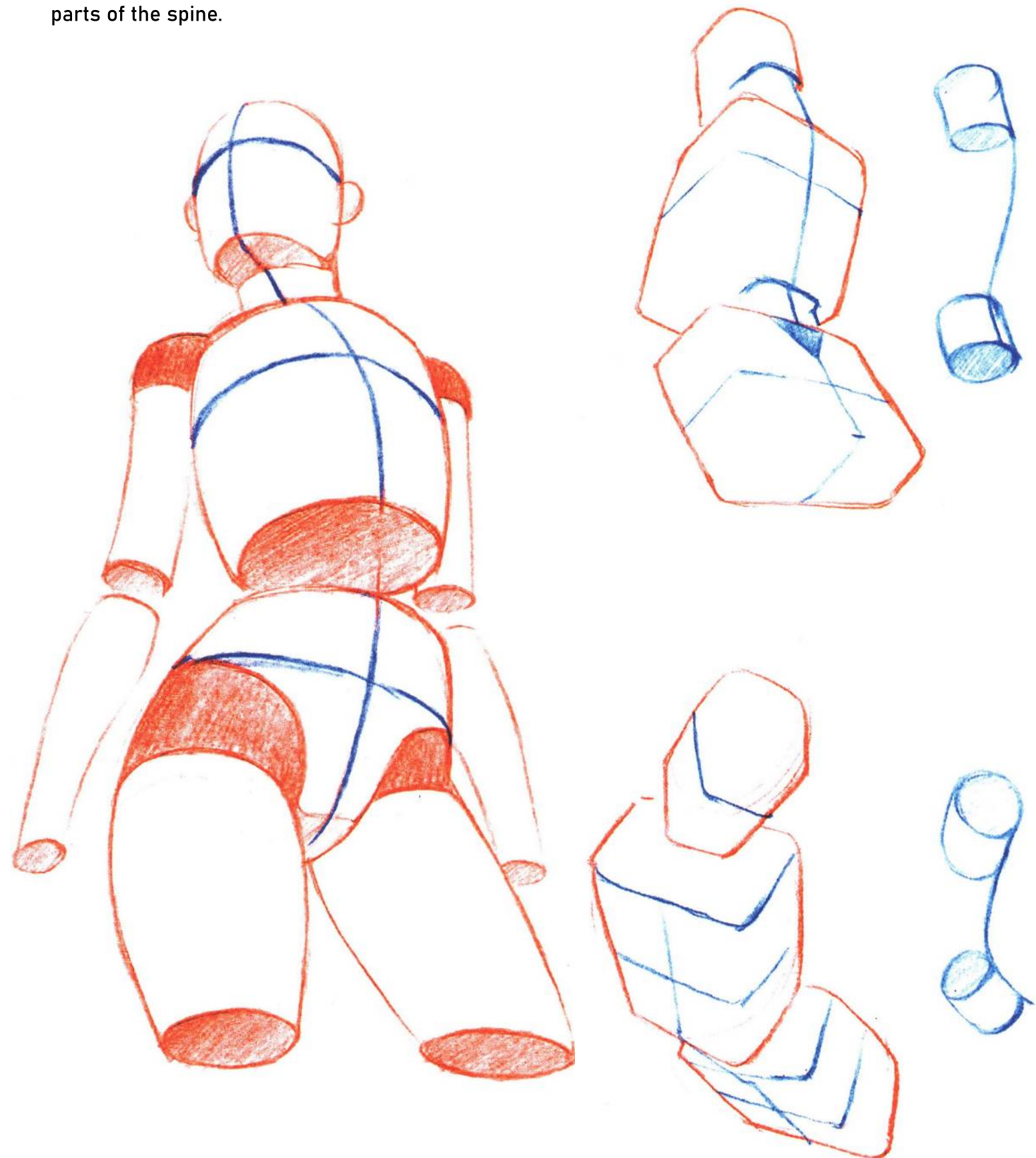
It is not difficult to draw a single twisted pipe, but a twisted pipe. To practice drawing tubes, you can break a long tube into short sections, then draw the twisted state of each short tube, and finally put the short tubes together one by one to get a very long tube.

The main purpose of practicing drawing tubes is to train our sensitivity to the rounded surface of a cylinder. Every time we twist and turn the tube, it changes its circular surface, and the thickness of the tube changes according to the principle of nearness and distance. By practicing the perspective of the tube, it will be easy to express the dynamics of the human body.



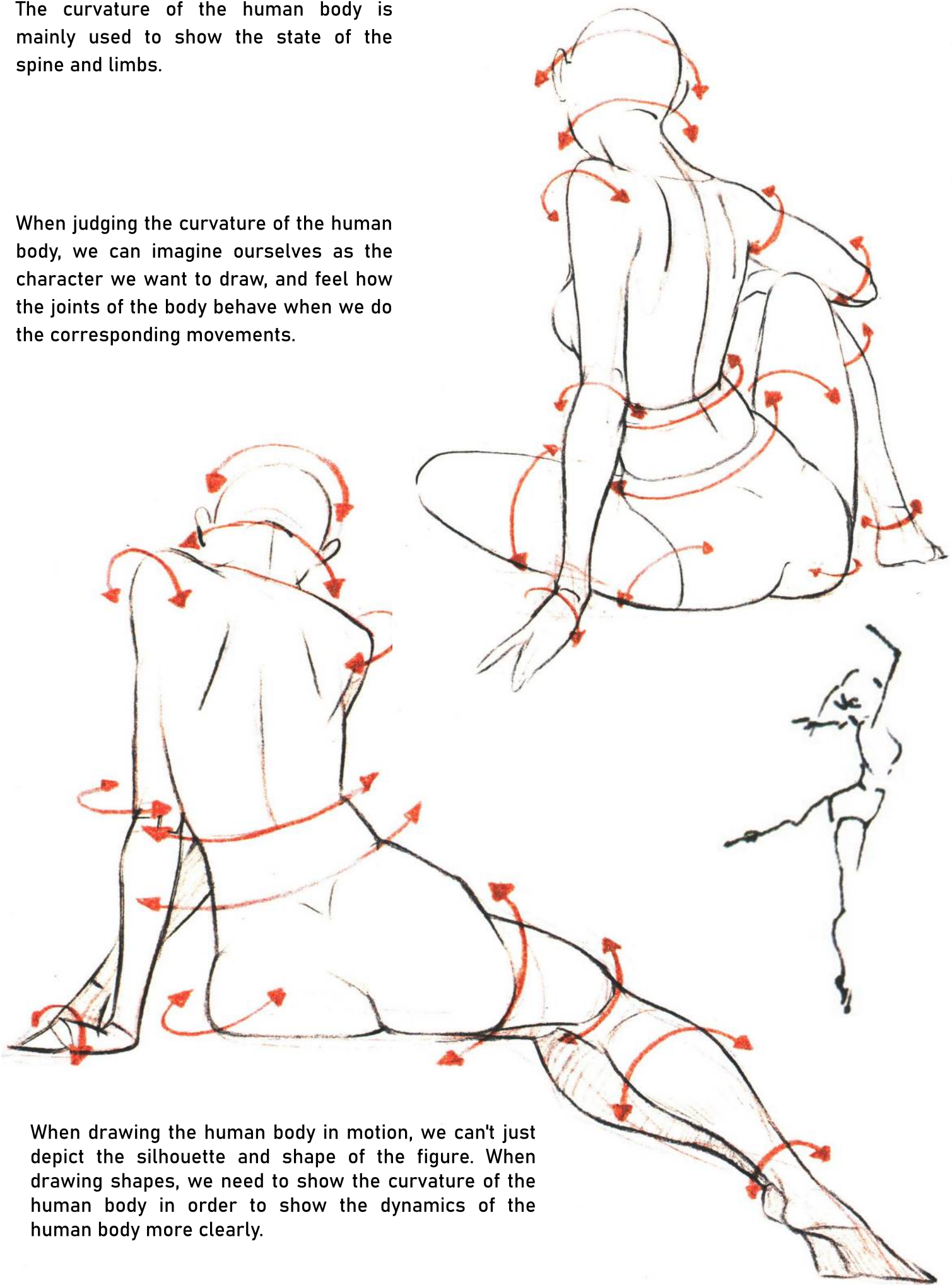
The human body can be viewed as a large cylinder, and every movement may cause its circular plane to change. When observing the human body, we can visualize the joints as being cut open and feel the different dynamics brought about by the changes in the circumferential plane.

The relationship between facets in the human body is ubiquitous. When observing the human body, we should focus our attention mainly on the spine ---- which is the most critical area in the use of the cylinder. Every movement of the spine leads to a different dynamic of the body. Particular attention should be paid to the cervical and lumbar vertebrae, which are the most frequently moving parts of the spine.



The curvature of the human body is mainly used to show the state of the spine and limbs.

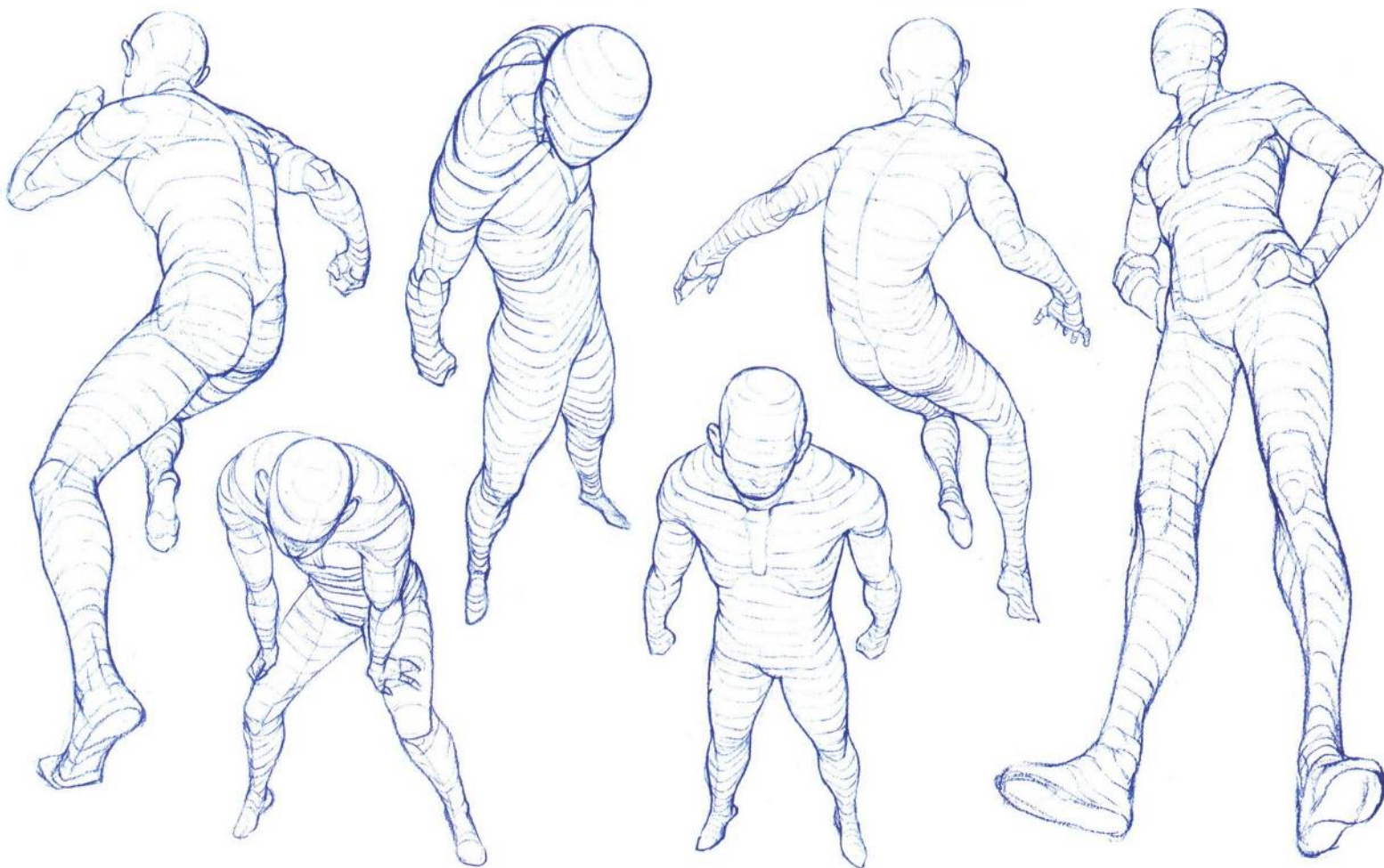
When judging the curvature of the human body, we can imagine ourselves as the character we want to draw, and feel how the joints of the body behave when we do the corresponding movements.



When drawing the human body in motion, we can't just depict the silhouette and shape of the figure. When drawing shapes, we need to show the curvature of the human body in order to show the dynamics of the human body more clearly.

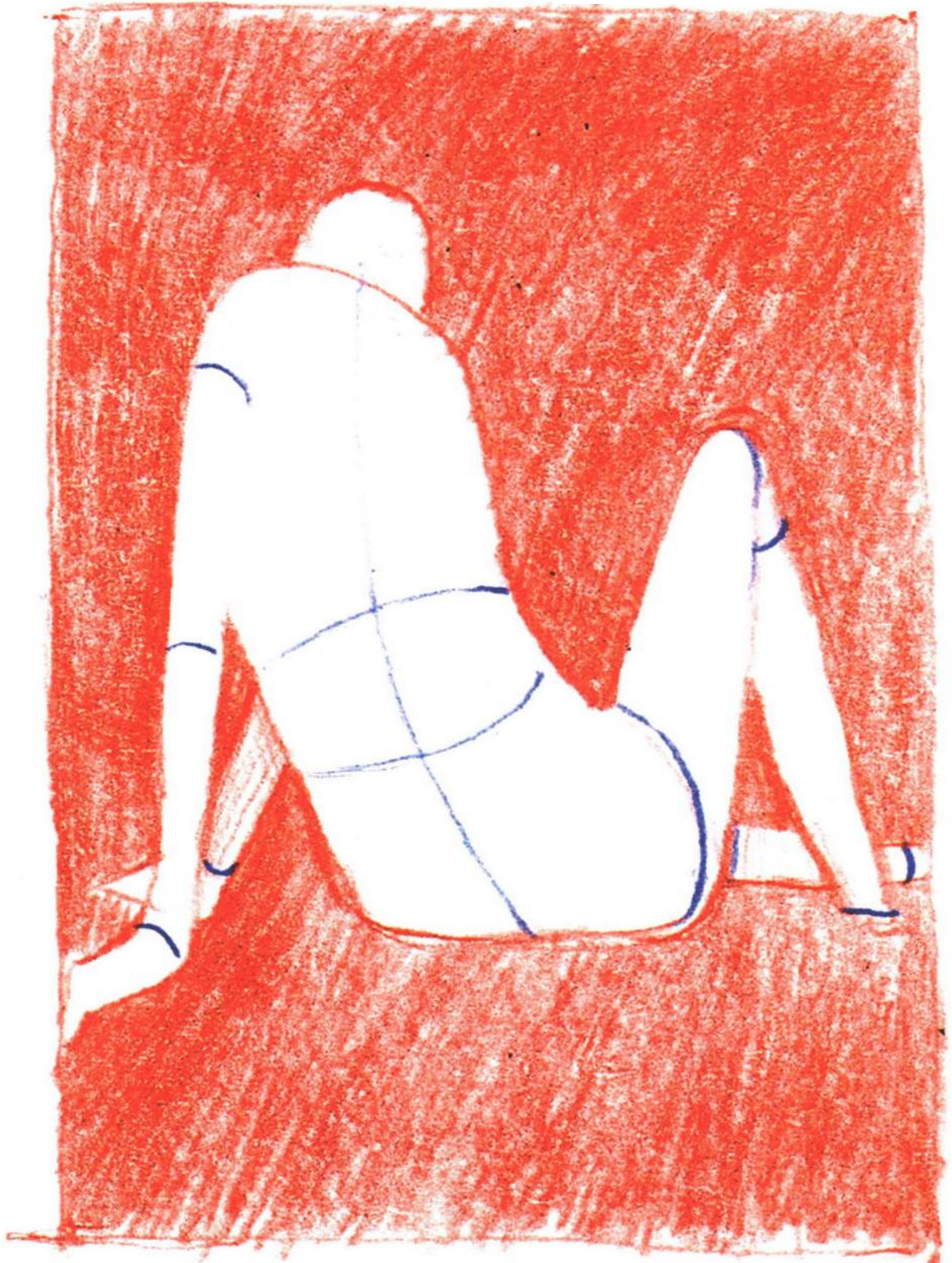
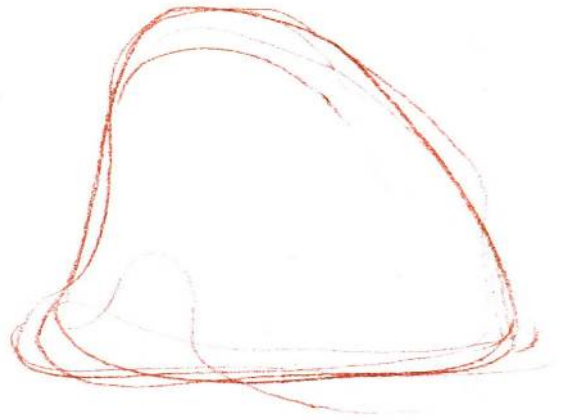
044 Human Anatomy for Artist 人体结构原理与绘画教学

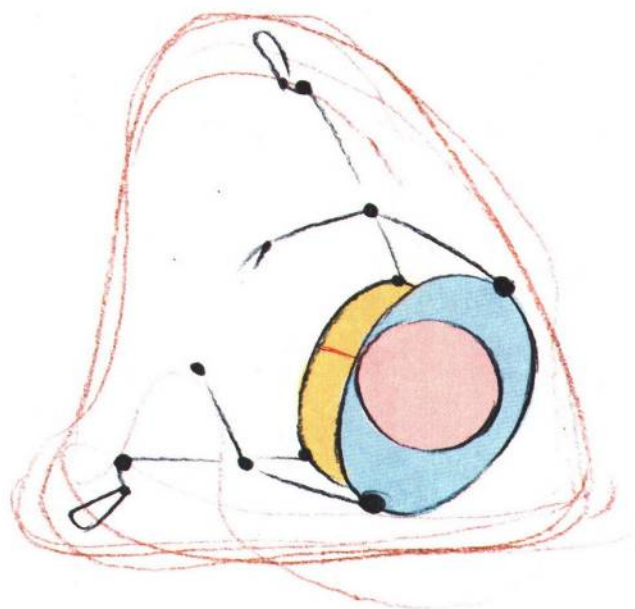
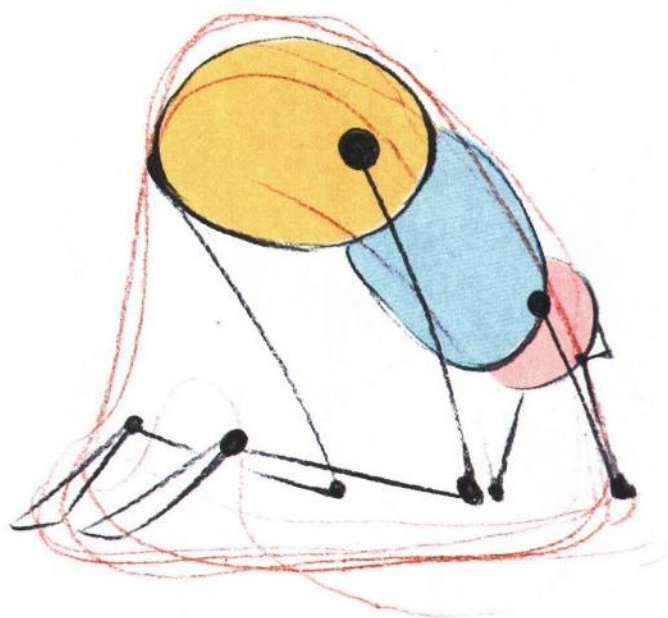
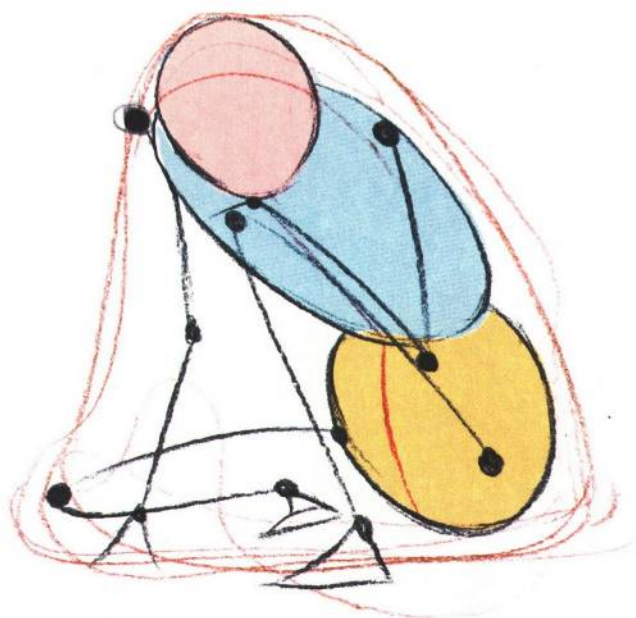
The curvature exercise is very helpful in showing the details of the body.

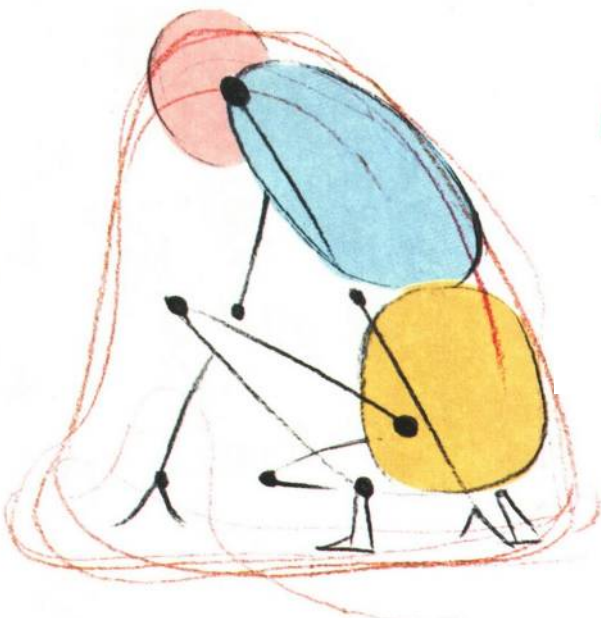
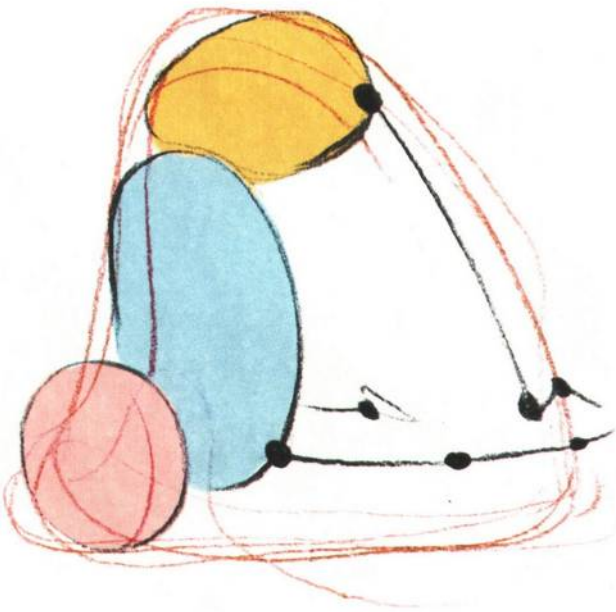
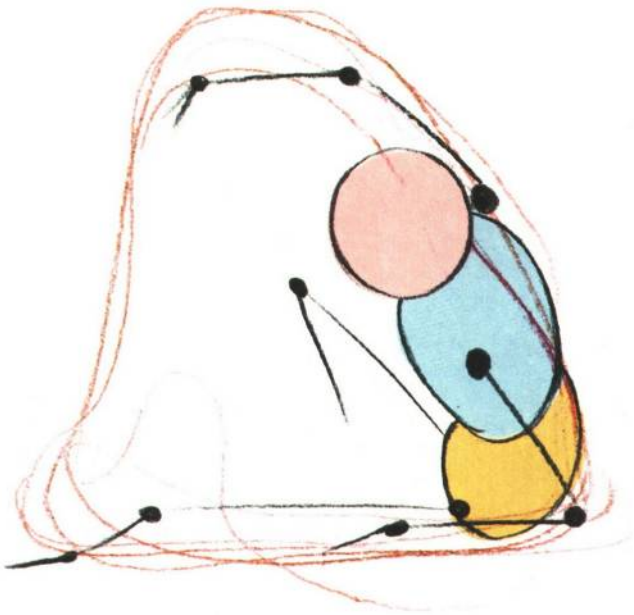


10 The human body and flat shapes

With some knowledge of the human body support, we can draw the human body in different states in different planar shapes.









Chapter Two

Head Structure

第二章

头部结构

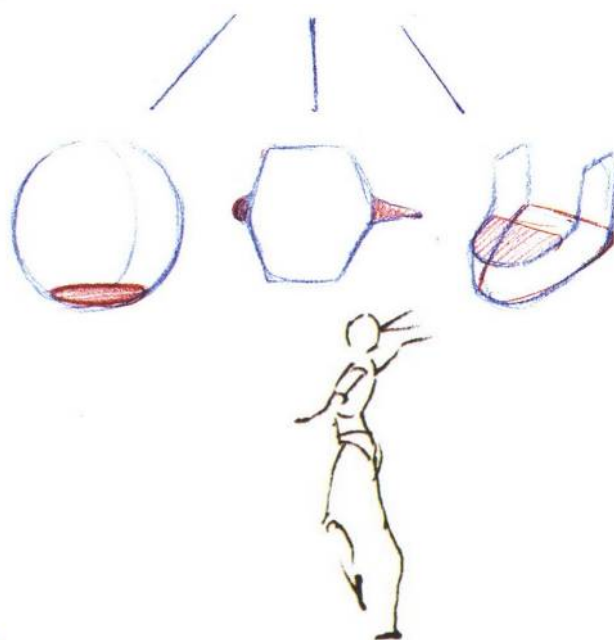
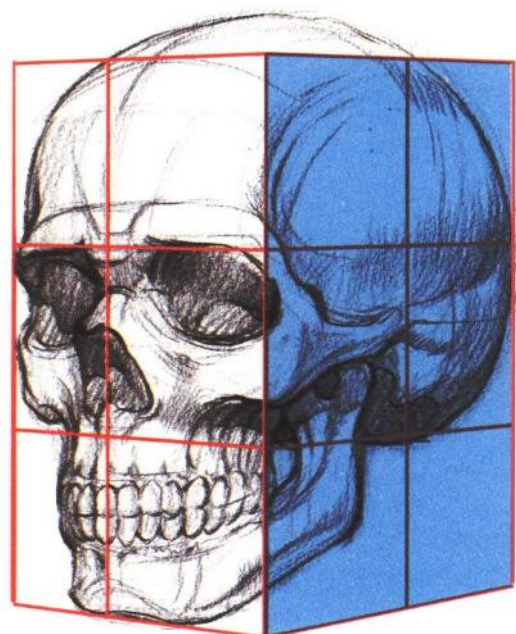


- 01 颅骨、面骨和下颌骨
- 02 头部骨骼的塑造步骤
- 03 头部骨骼的绘制练习
- 04 头部三分化的运用
- 05 人物的面部特征
- 06 不同角度下同一角色的面部特征
- 07 五官的塑造
- 08 头发的塑造
- 09 面部肌肉和表情
- 10 头部的绘制步骤
- 11 头部的综合练习

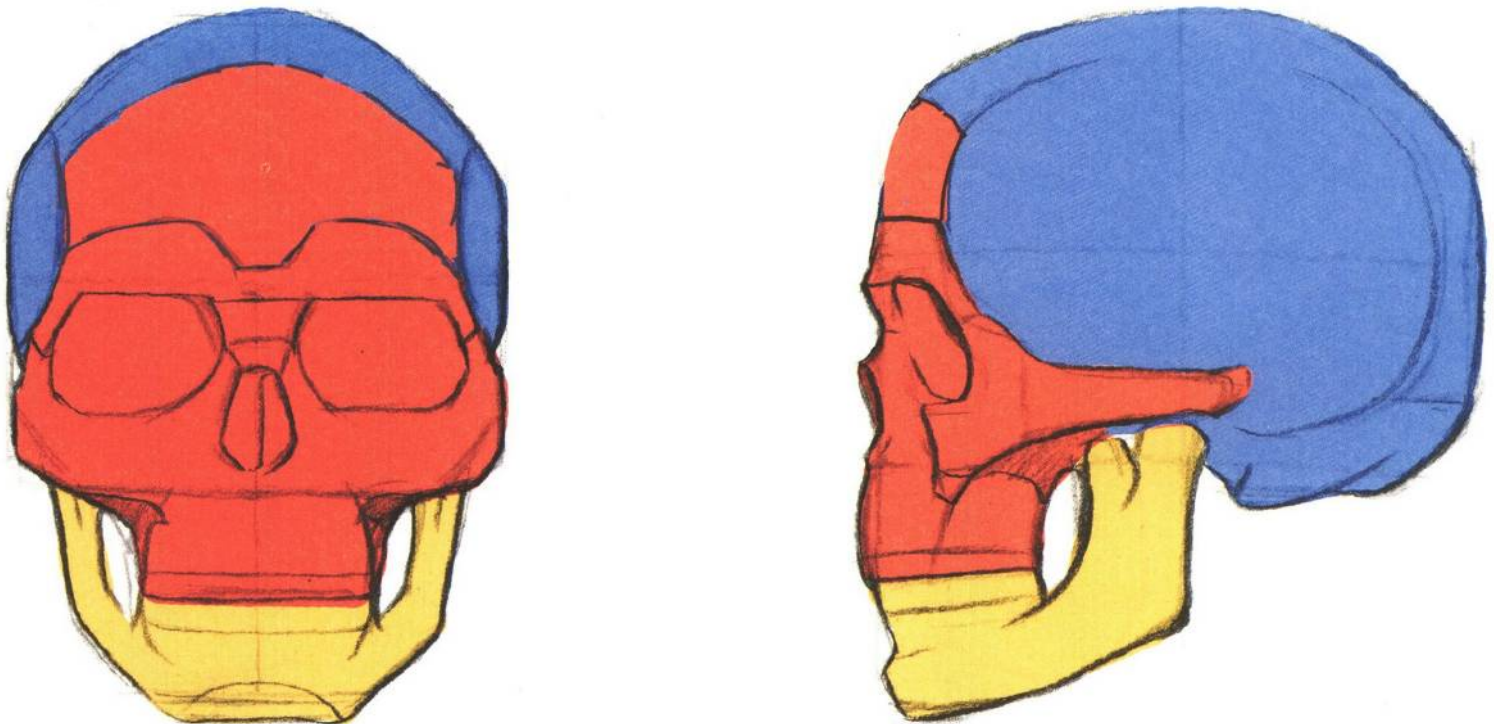
01 Skull, Face and Jaw

Head structure is complex, and different characters have different head structure characteristics.

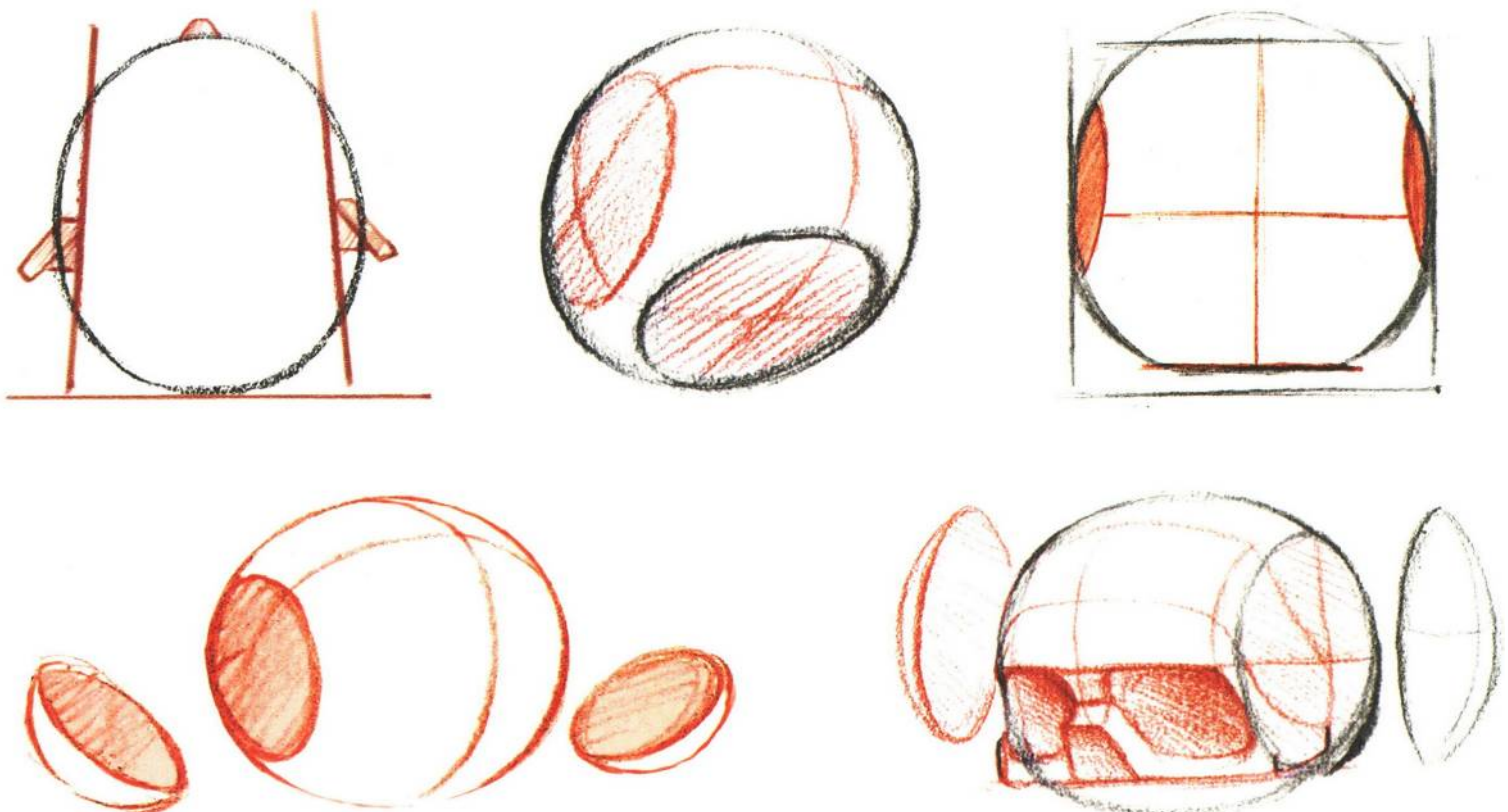
In order to understand the head structure, we need to disassemble the head, and grasp the knowledge of head structure from various angles, such as bones, muscles, space, features, and expressions of the head. We can begin to understand the structure of the human head by looking at the bones of the head. Here, we focus on the head space and the composition of the head.



The skull consists of more than 20 bones, excluding the ear bones, which change somewhat with age. To make it easier to understand the structure of the head, it is possible to put the bones together partially and triangulate the head, as in to make it look like the head is made up of three parts: the skull, the facial bones, and the mandible.

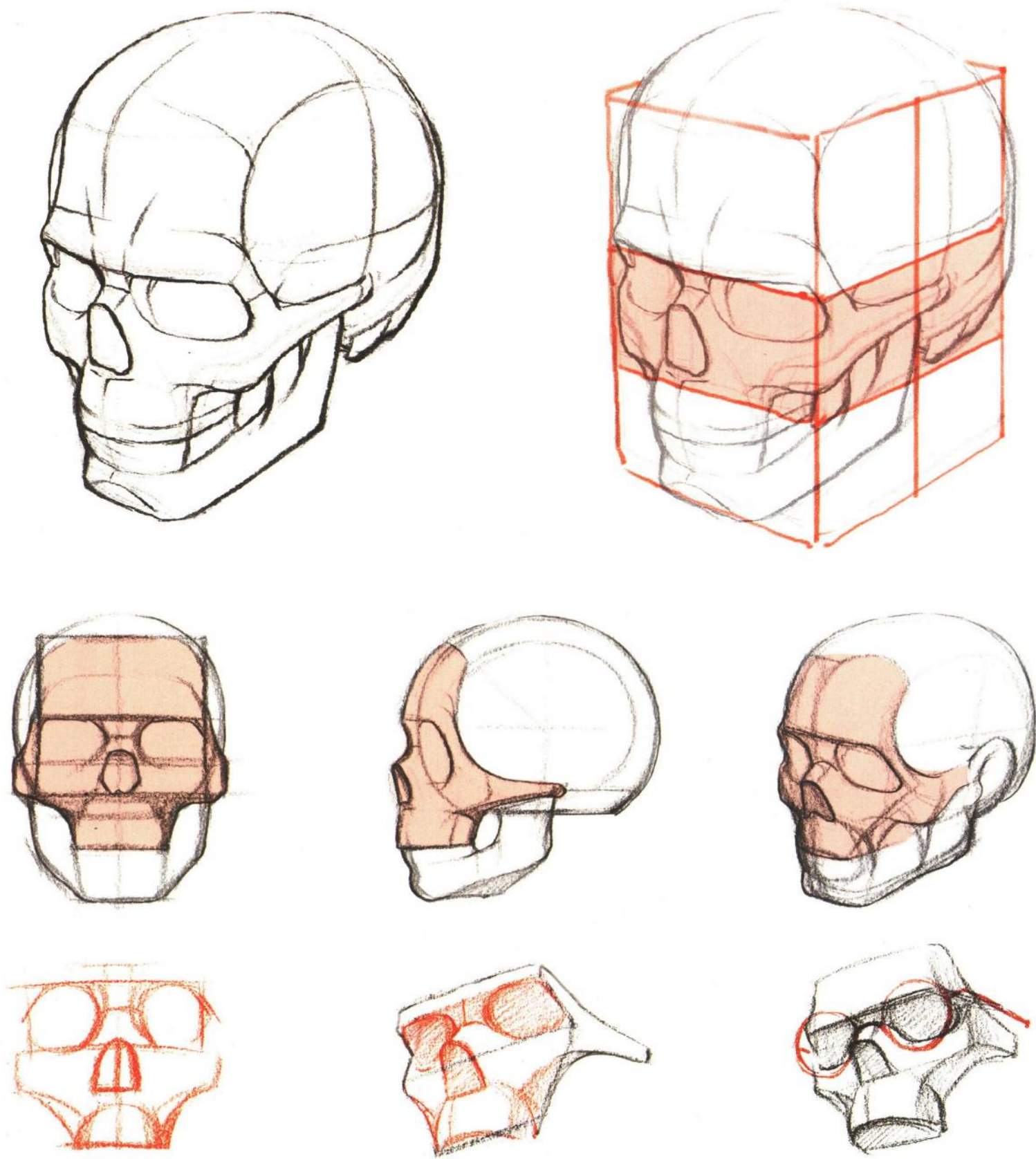


The skull is like an ellipse with a diagonal cut on the left and right sides, and these two facets are where the head turns. There is another section at the base of the head, which is the area connecting the head to the neck. We can clearly see the position of these three facets from the front.



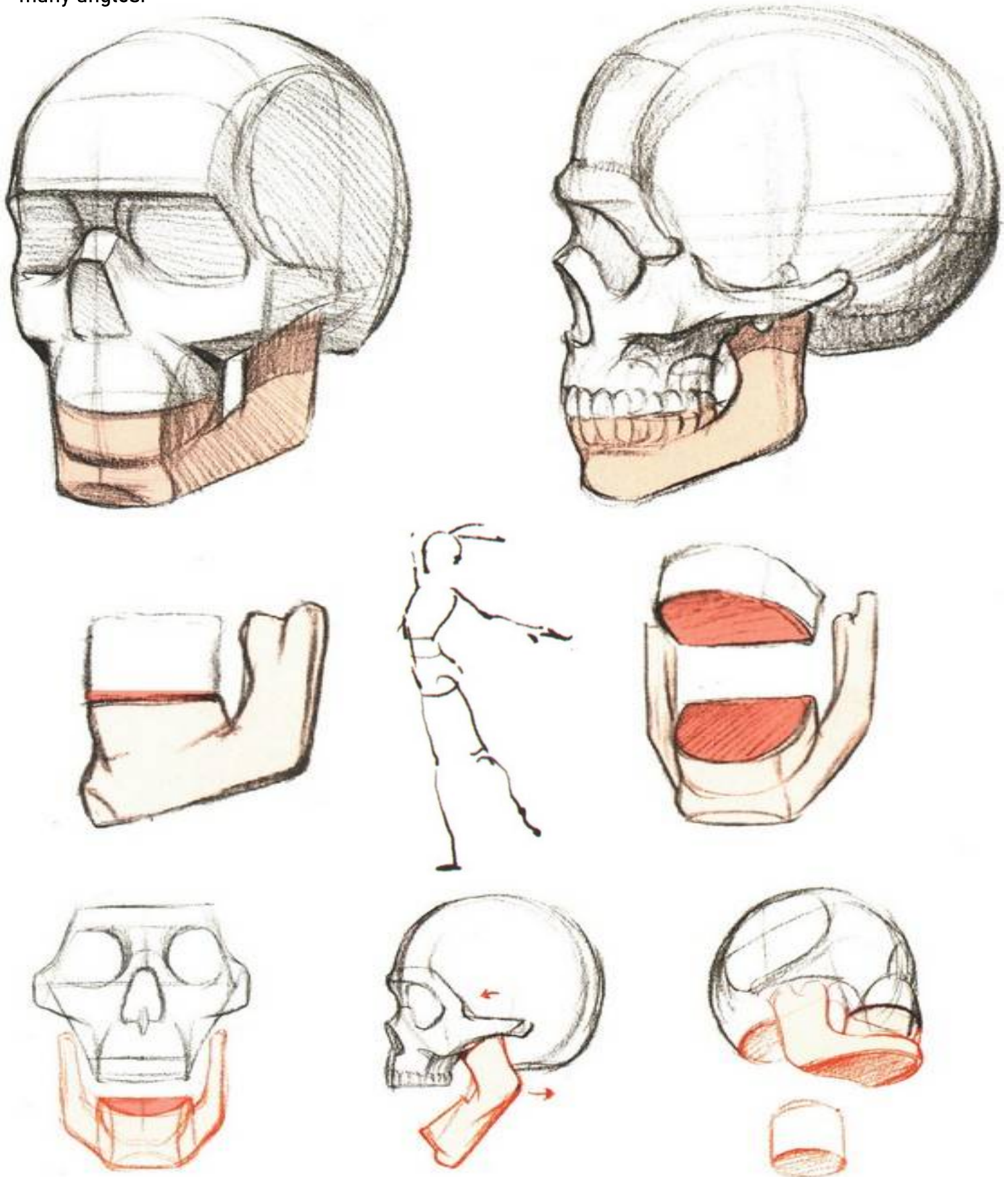
The facial bone consists of the frontal bone, brow bone, cheek bone, nasal bone and maxillary bone, etc. The undulation of the face is the key to express the facial features of different characters. The undulation of the face is the key to express the facial features of different characters, so the facial bone is the part of the head structure that needs to be emphasized.

Our five senses are mainly dependent on the facial bones, as long as we can draw the perspective relationship of the facial bones from various angles, we can quickly find the exact location of the five senses. The undulation of the facial bones is more complicated, we can treat this part of the structure as glasses, which is easier to control.



The mandible is the only movable bone in the head. As we age, changes in the jawbone become more and more noticeable. The size of the jawbone varies between men and women, the elderly and children.

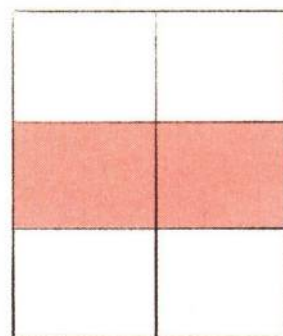
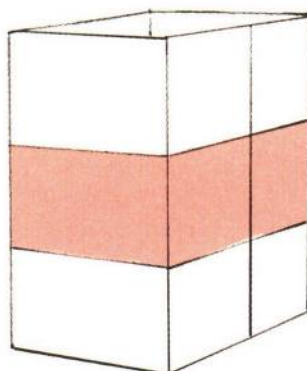
The most critical part of the jawbone is the tooth bed. When drawing the contour line of the jaw, you need to consider the perspective of the tooth bed, so that you can draw a reasonable jaw and make the whole head more natural. When drawing the jawbone, we need to show its perspective from many angles.



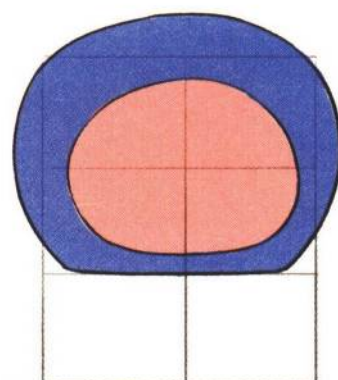
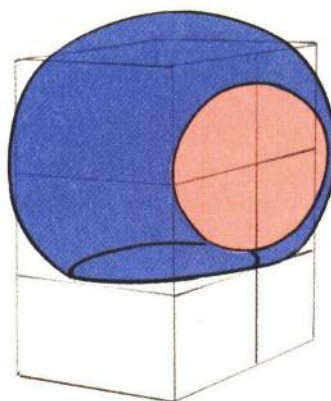
02Steps for shaping the bones of the head

1. To create the head skeleton, first draw a rectangle and divide it into three equal parts along the long sides.

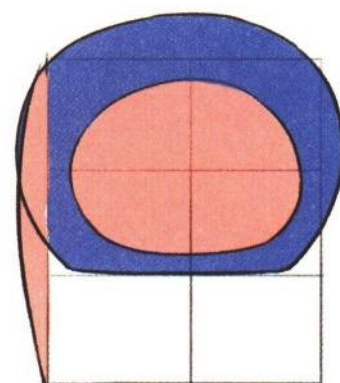
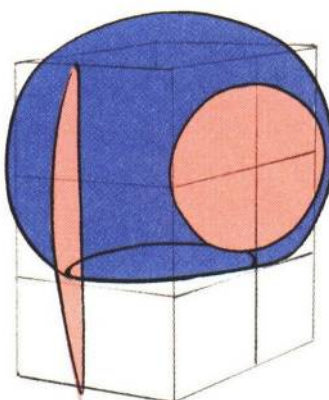
If you are drawing a younger character, you can move the red part of the figure downwards.



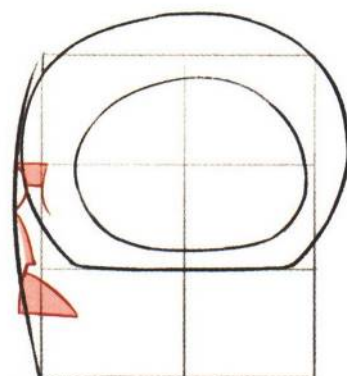
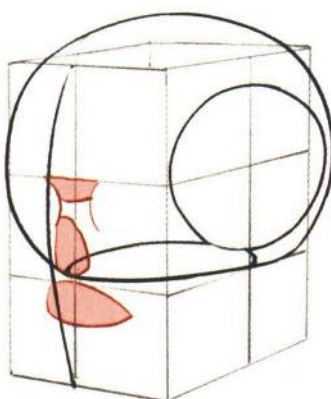
2. Draw an ellipse representing the skull in the rectangle, and draw three sections of the ellipse. The younger the character, the larger the skull.



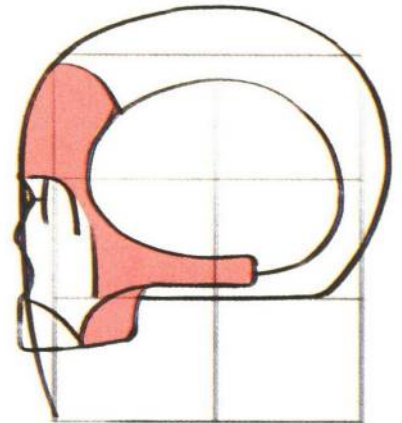
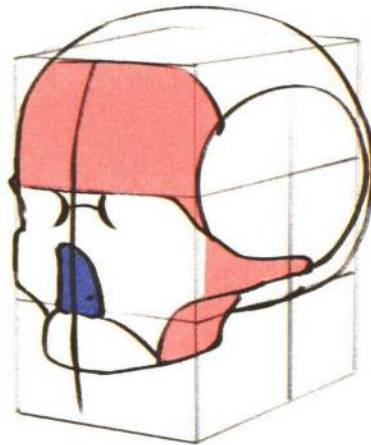
3. Draw the center-line of the head. Note that the center-line is not a straight line, but rather protrudes outward with a curve.



4. Using the crosshairs as a reference, draw the undulations of the three key areas of the face: the arch bone of the eyebrow, the nasal bone, and the maxilla.

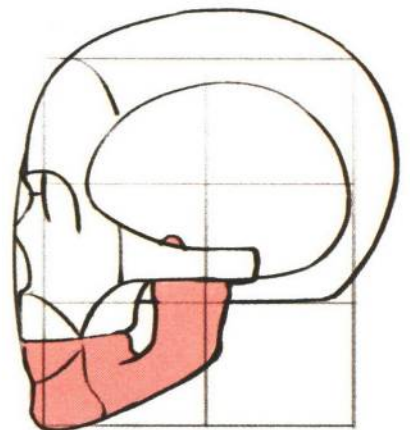
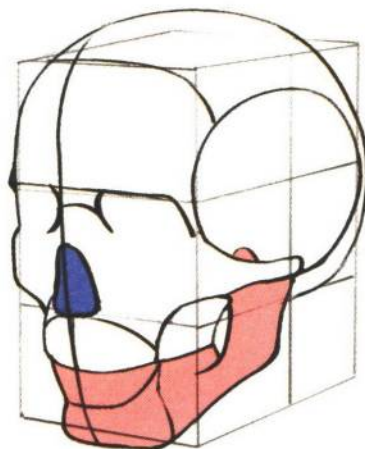


5. Complete the frontal bone, the cheekbone, and the remainder of the maxilla to create the turn of the face.

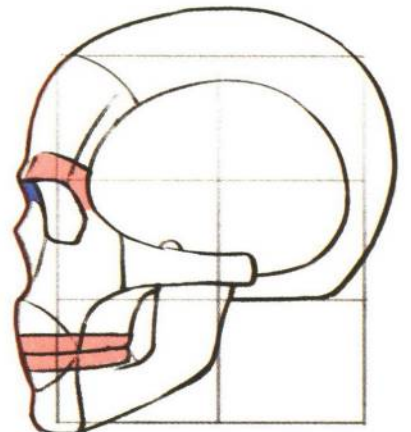
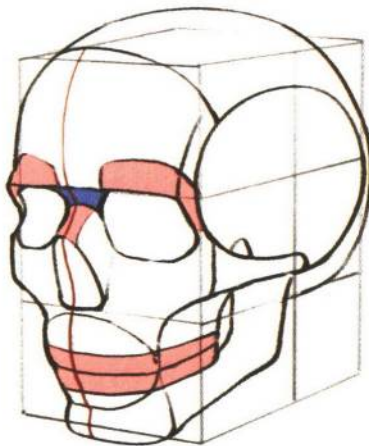


6. Shape the lower jaw.

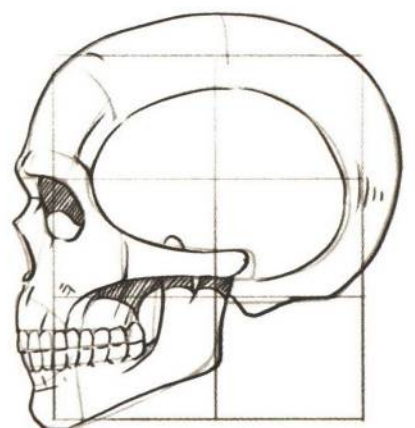
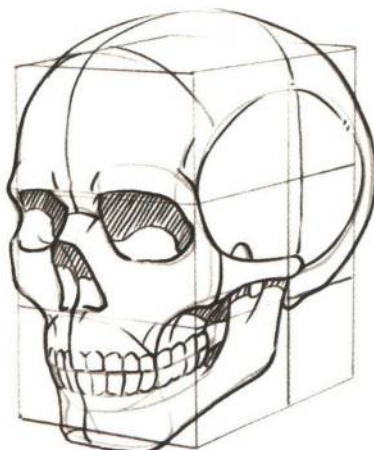
By drawing the three main parts of the head in the above order, the skeleton of the head is basically formed.



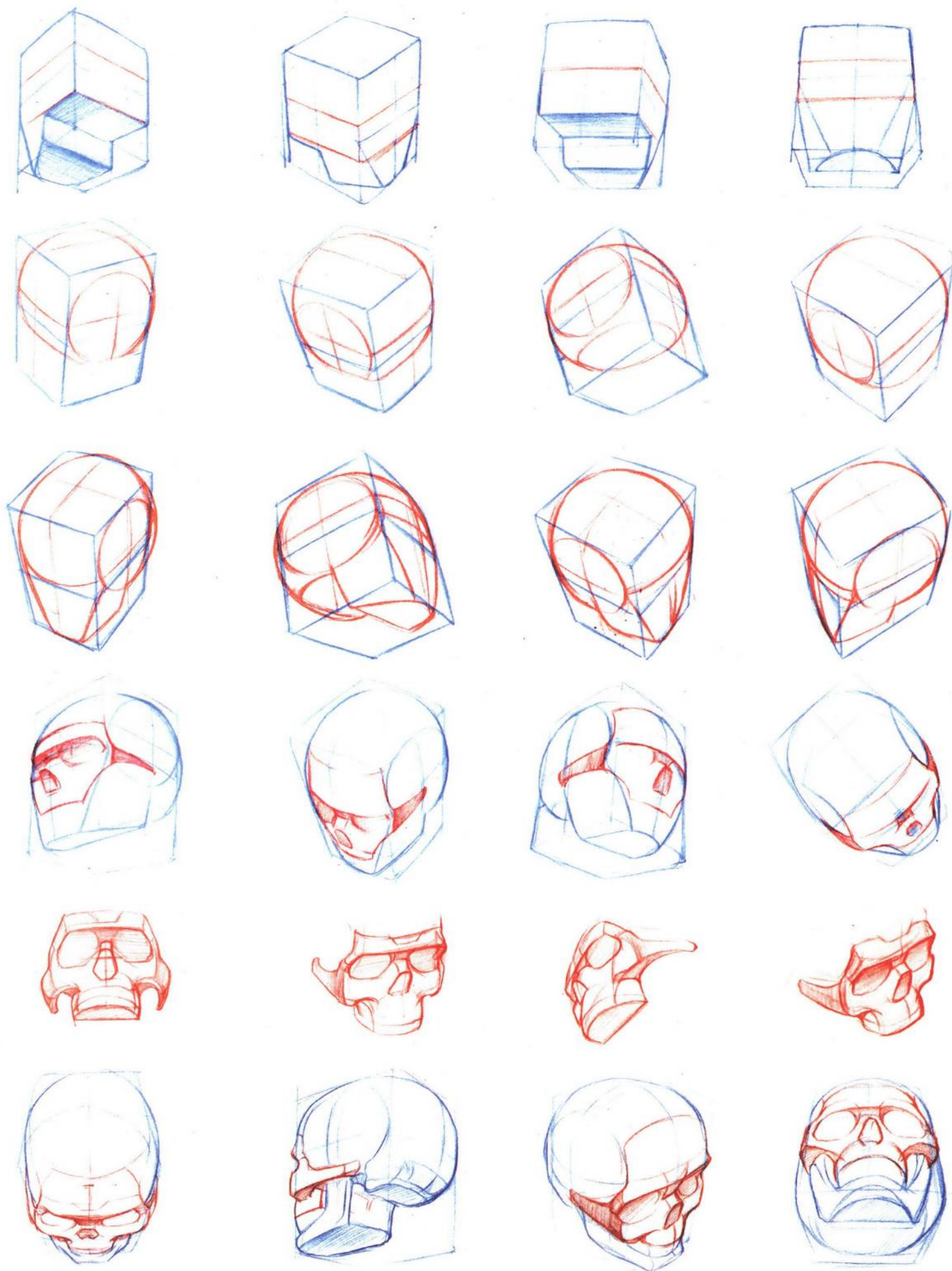
7. In order to show the structure of the head more clearly, we can use some sketching tones to draw the undulation of the head, focusing on the orbits of the eyes, the bridge of the nose, and the cheekbones.



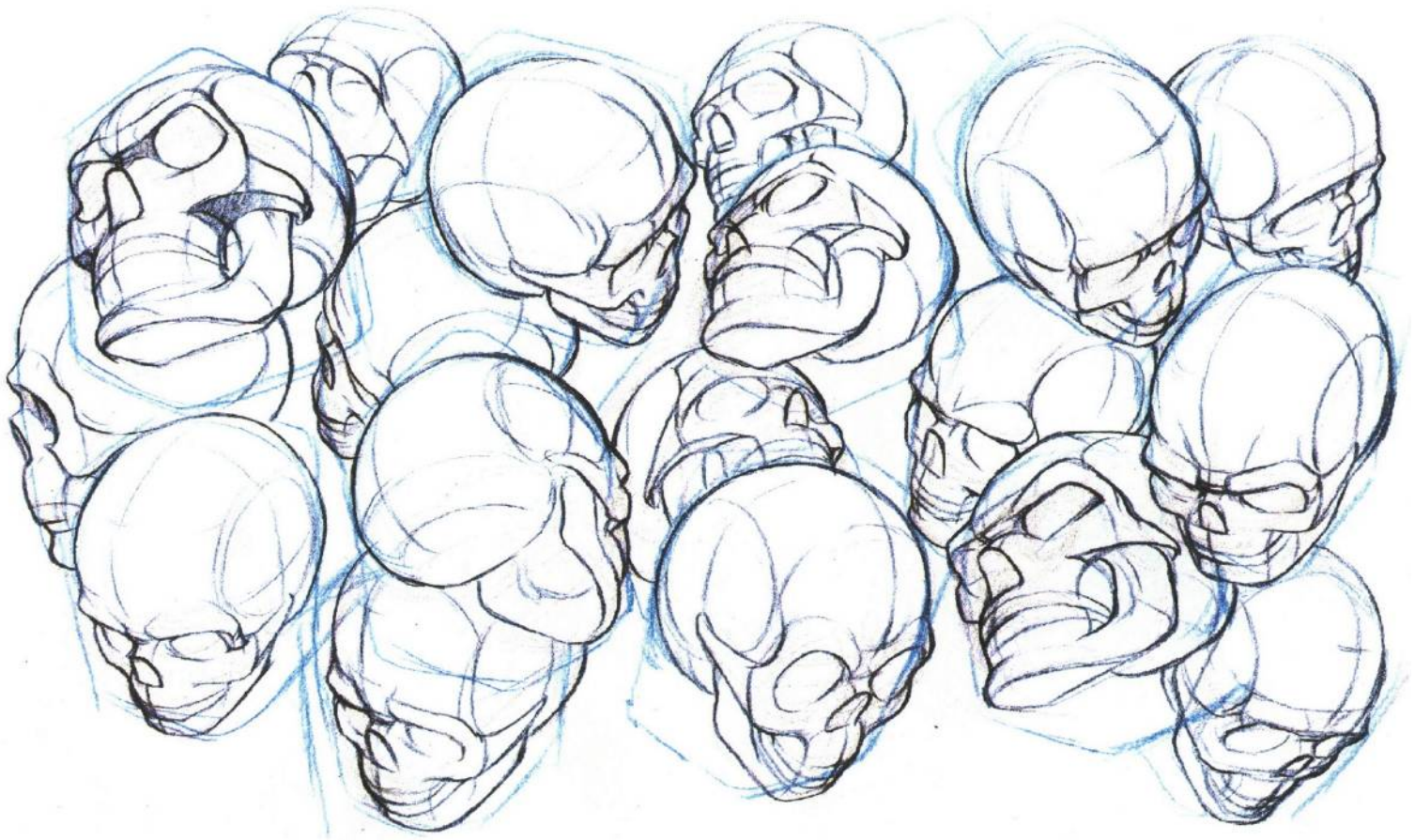
8. Finish sketching the remaining parts of the head to show the overall relationship of the bones.



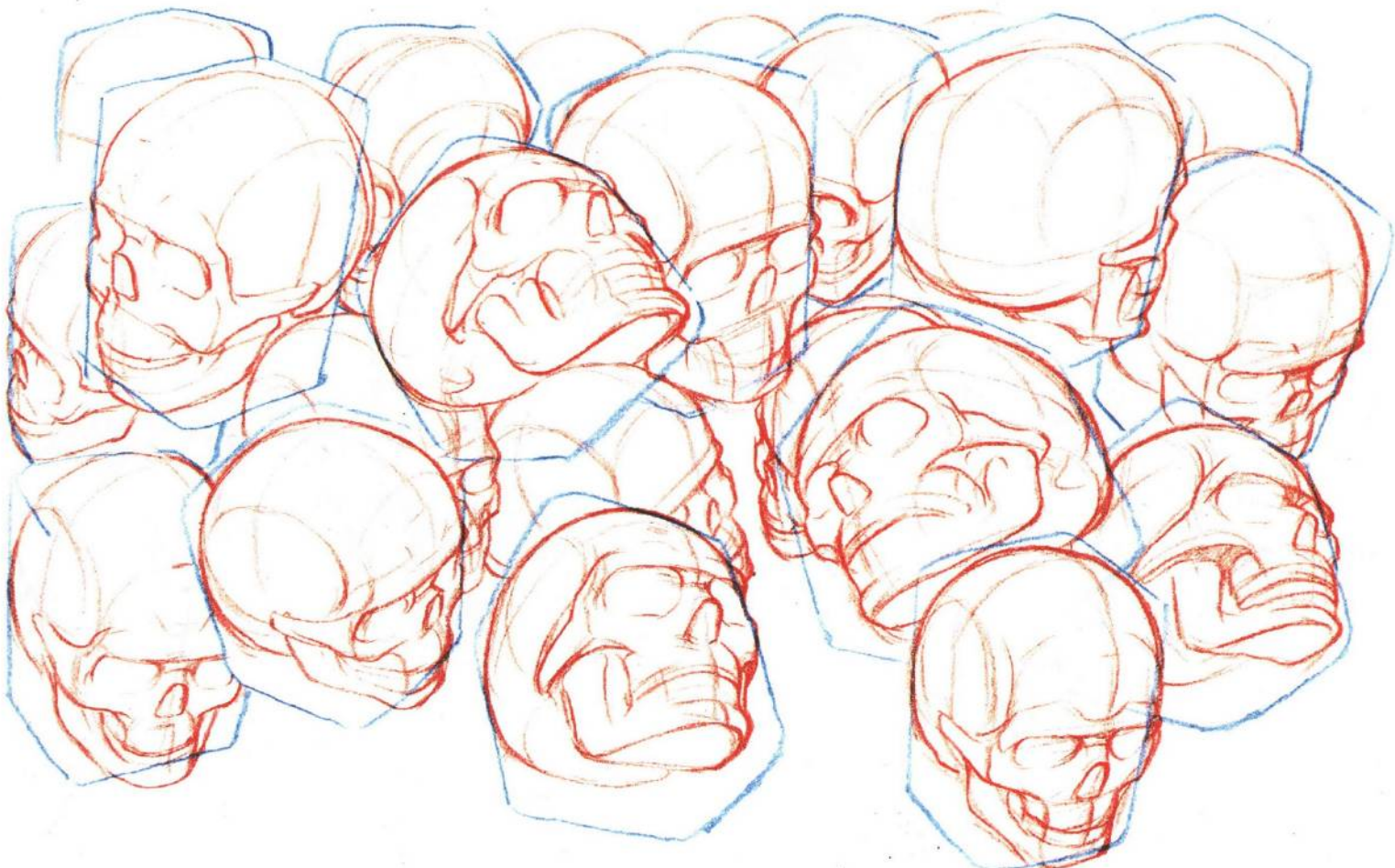
03 Practice drawing the bones of the head



When you practice drawing the bones of the head, you can do some individual training for each part of the head. Mastering the structure of the head will help us to create better artwork.



You can try to draw some random rectangles on a piece of paper, and then draw them as heads facing different directions, this exercise will be helpful for us to create the character's head later.

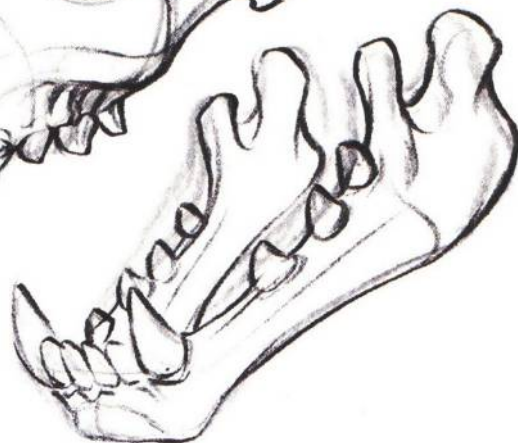
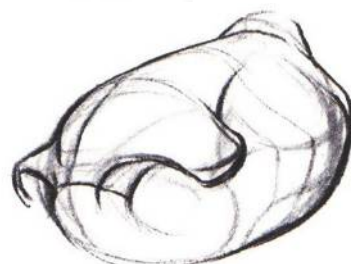


04 Use of head trisection

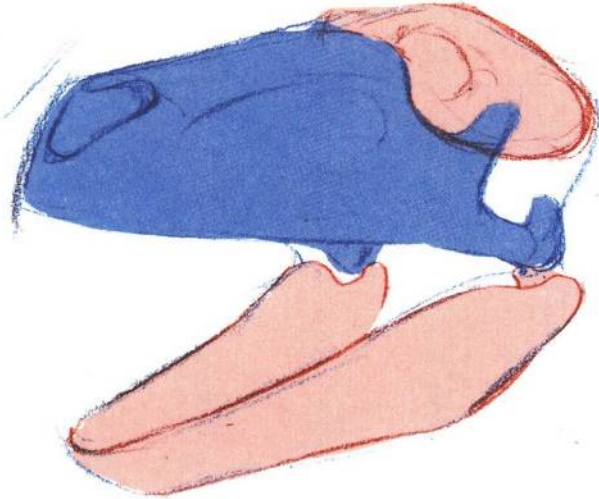
The method of head division is not only applicable to the human head. In fact, the composition of the head of many animals is similar to that of human beings, and we can also divide the head of an animal into three main parts: skull, face and jaw.

There are many different ways of presenting the head of an animal, and the skull, face and jaw of different animals are different due to their different living environments and habits. Therefore, when creating animals, we can make use of this difference to exaggerate the head structure correspondingly, so that the created animals will look more vivid.

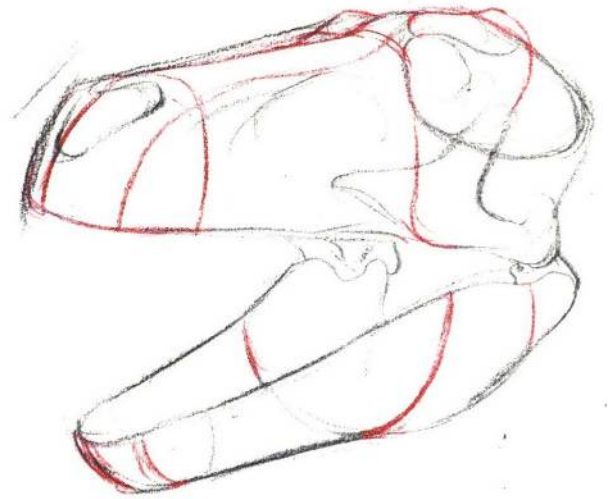
To express the head characteristics of different monsters, we can refer to the head structures of different types of animals, add some subjective elements on the basis of the original head structure of the animal, or adjust the proportion appropriately.



Steps for drawing an animal's head



1. Trisect the head.

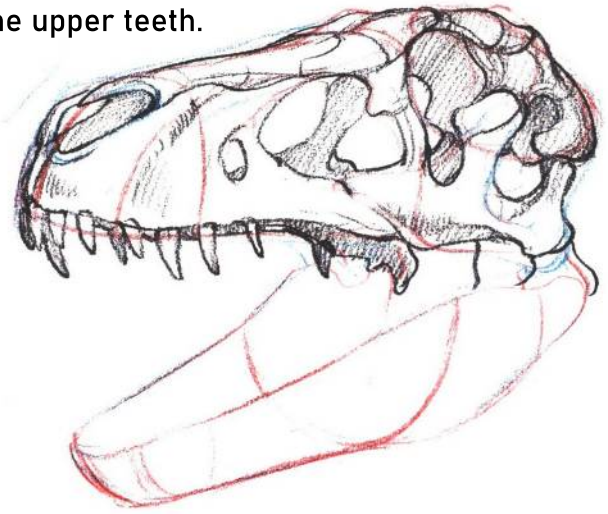


2. Mark the undulations of the head with lines to make the flat areas appear more 3D.

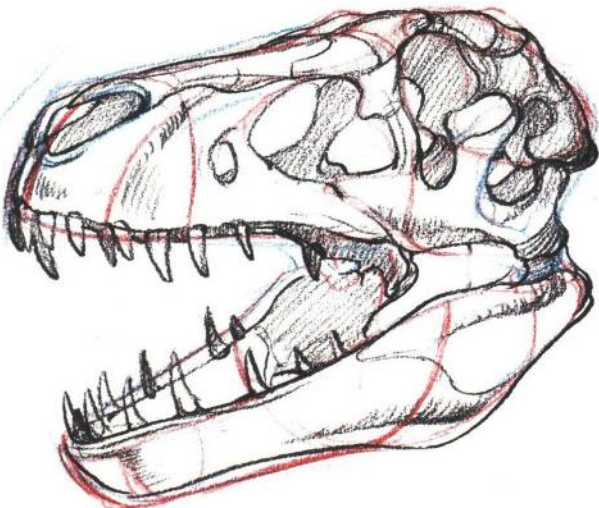
3. Shape the head.



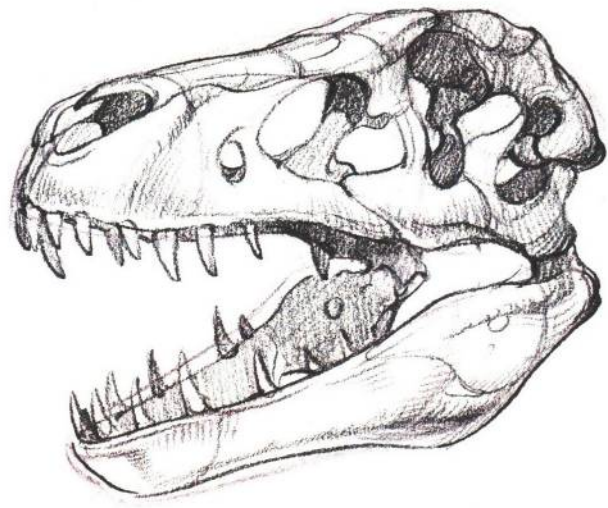
4. Shape the details of the face and head, and draw the upper teeth.



5. Drawing the lower joint and the teeth underneath to create an overall undulation.

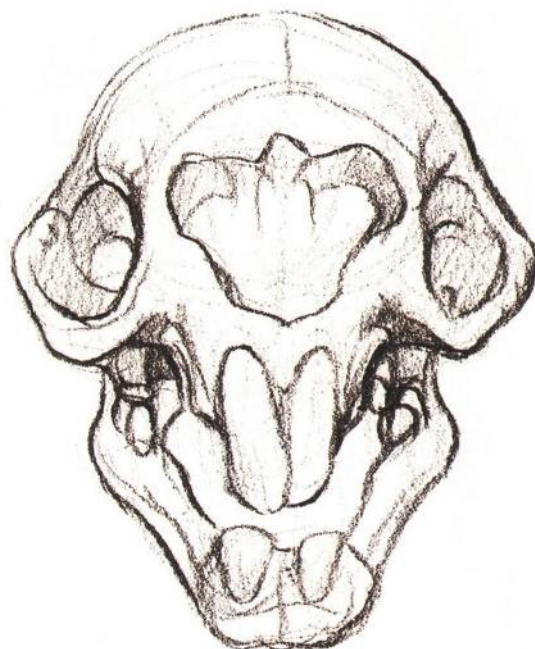
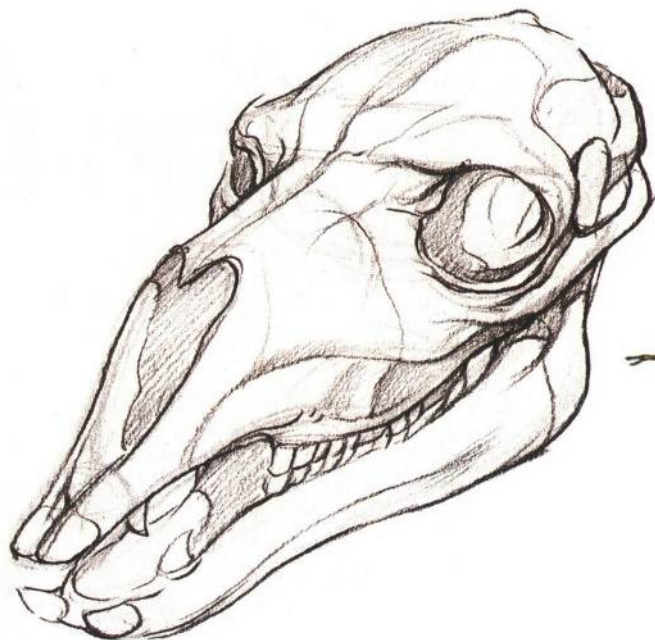
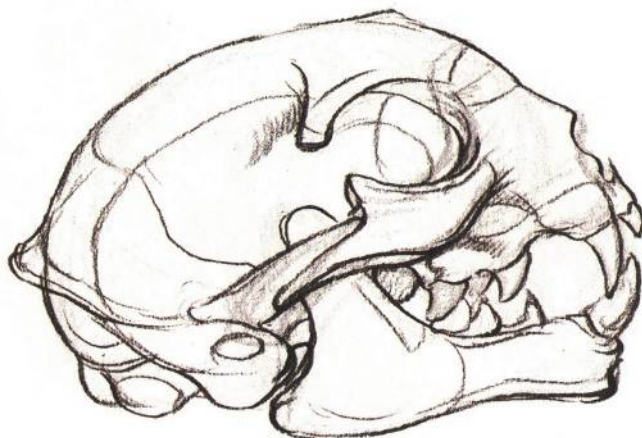


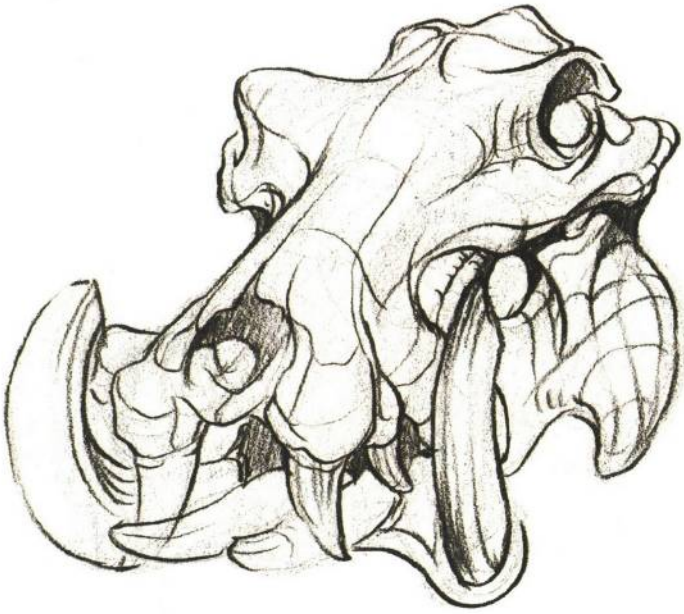
6. Remove the sketch to get a more finished animal's head.



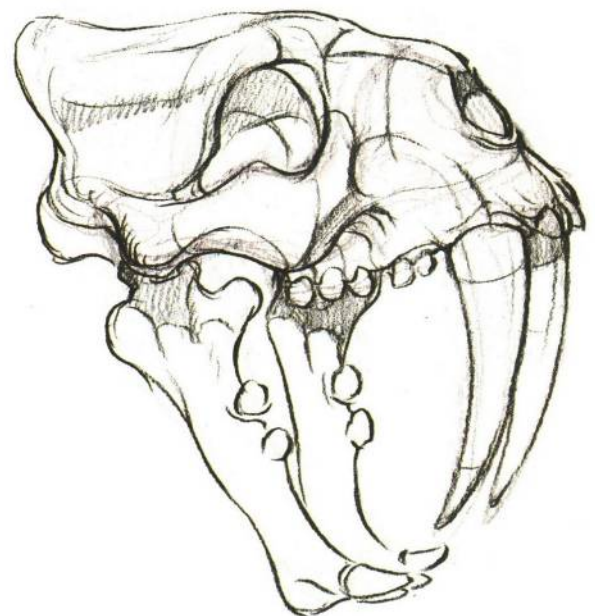
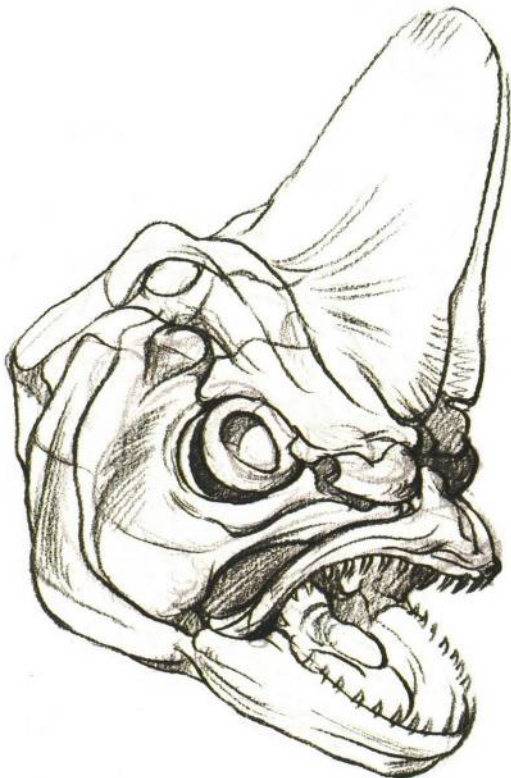
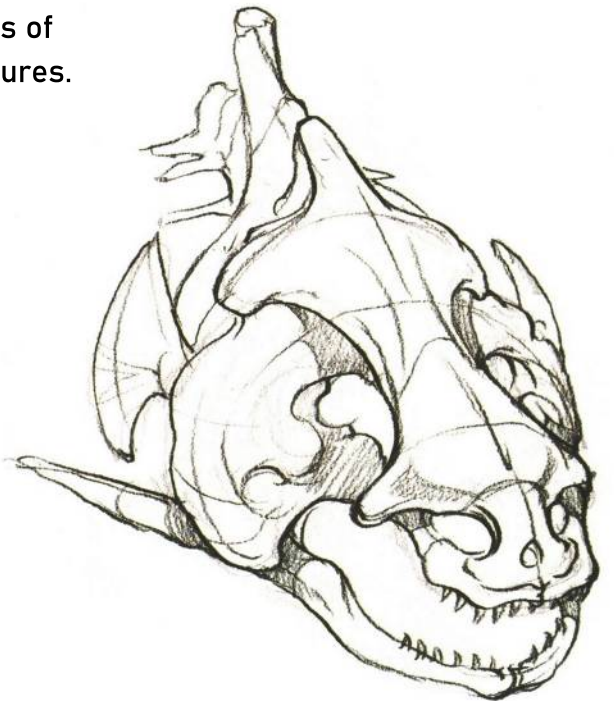
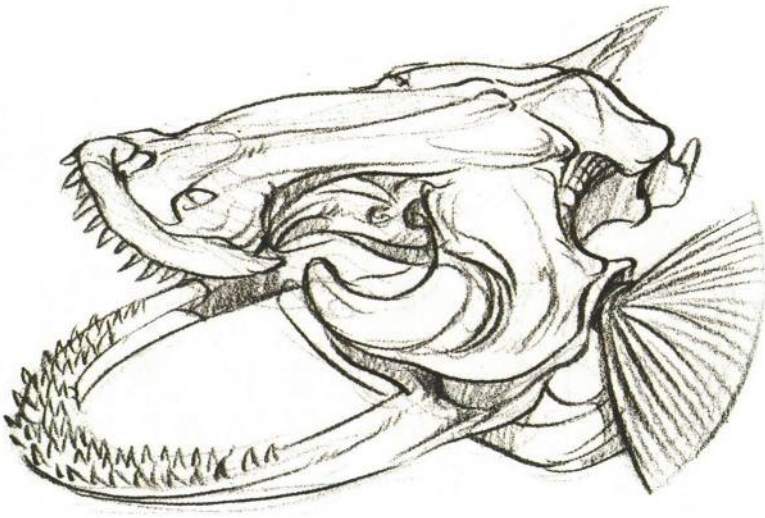


We can use the simplification method to practice carving the heads of animals with relatively simple structures.





After practicing to a certain extent, we can select the heads of animals with more complex structures and draw their features.



Six steps to draw a monster's head:

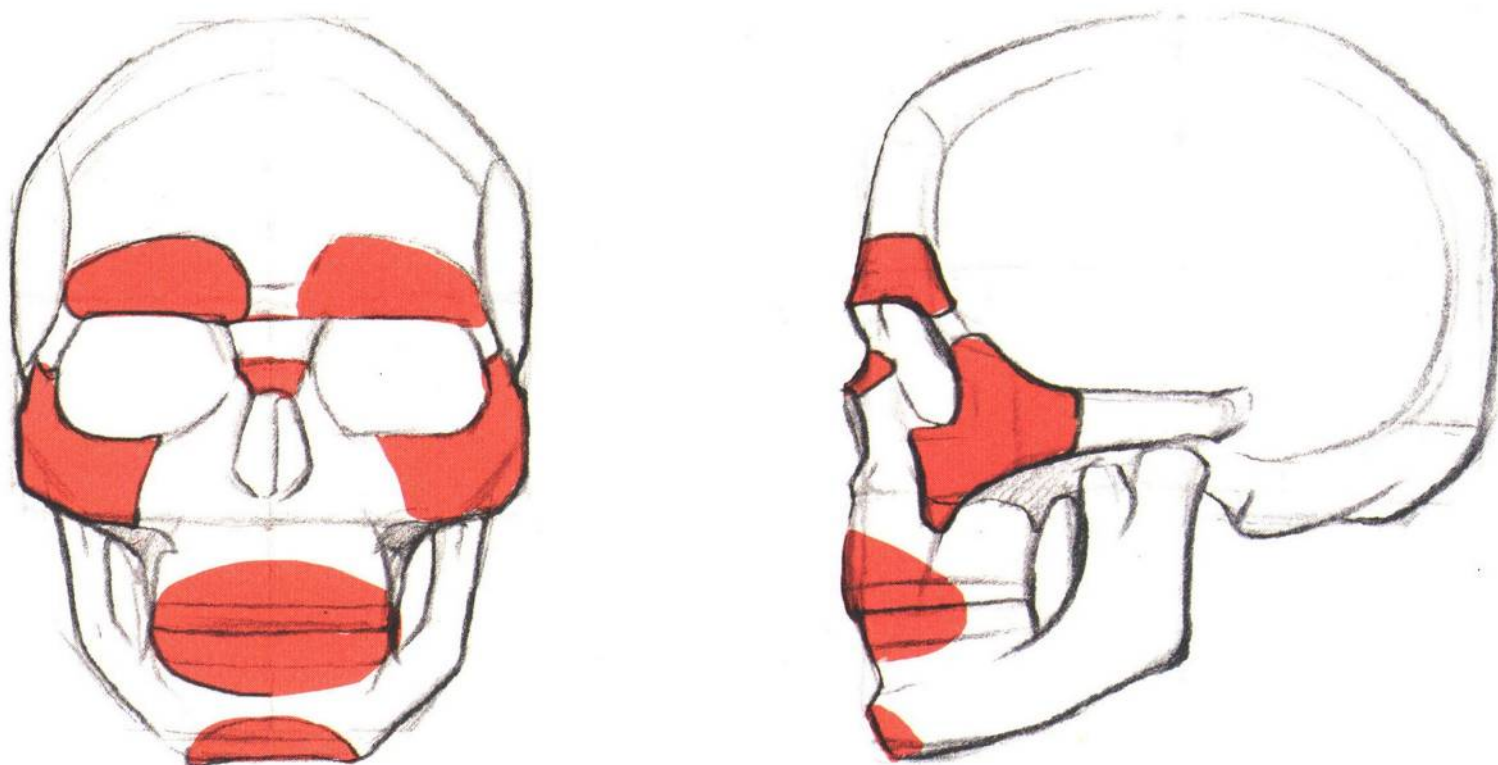


These practice steps can provide inspiration and experience for us to do head creation afterwards.

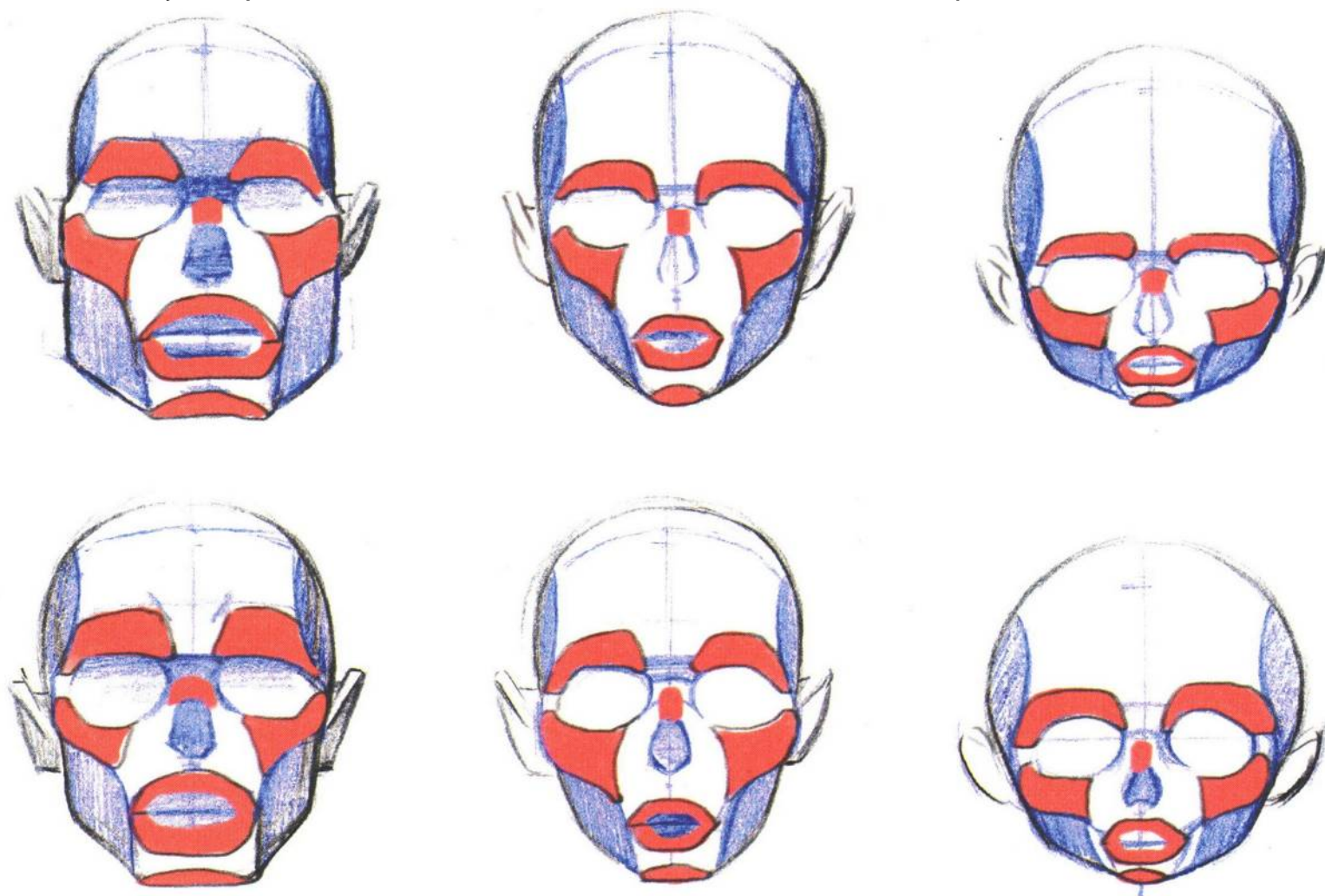


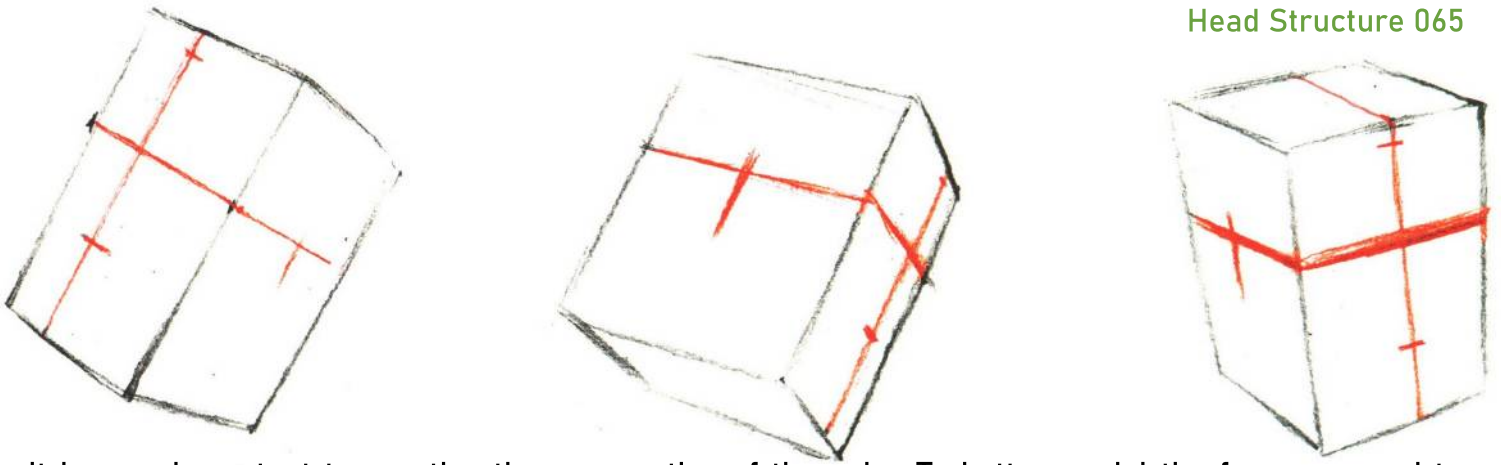
05 Facial features of people

The size and undulation of the red areas (facial structure) in the image below show how the facial features of different people, of different ages, genders, and races, can be visualized.

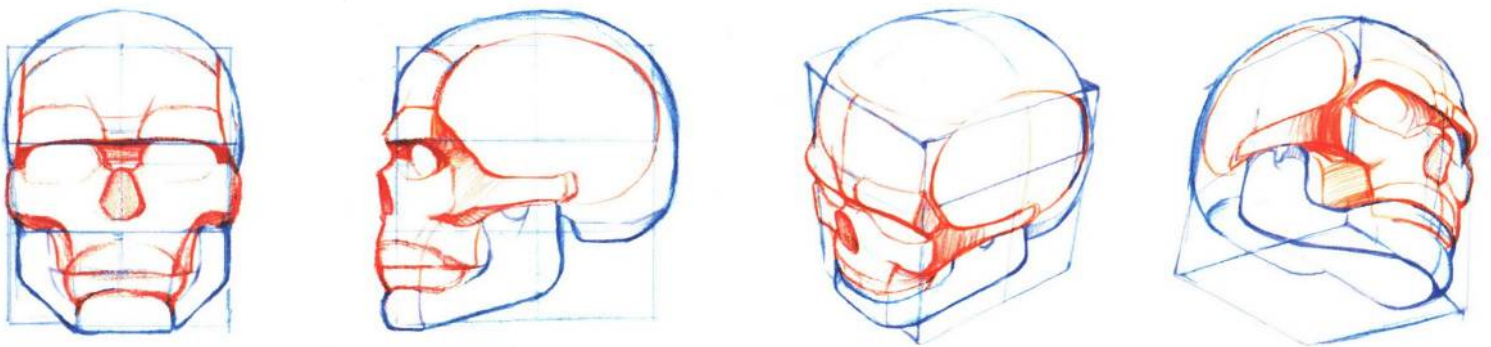


We can try to adjust these red areas when we make a differentiation of a person's face.

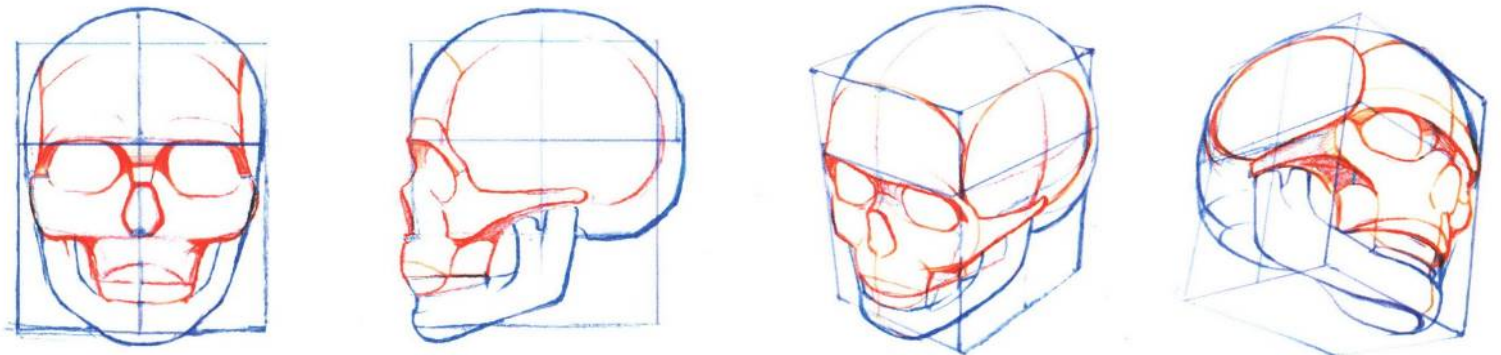




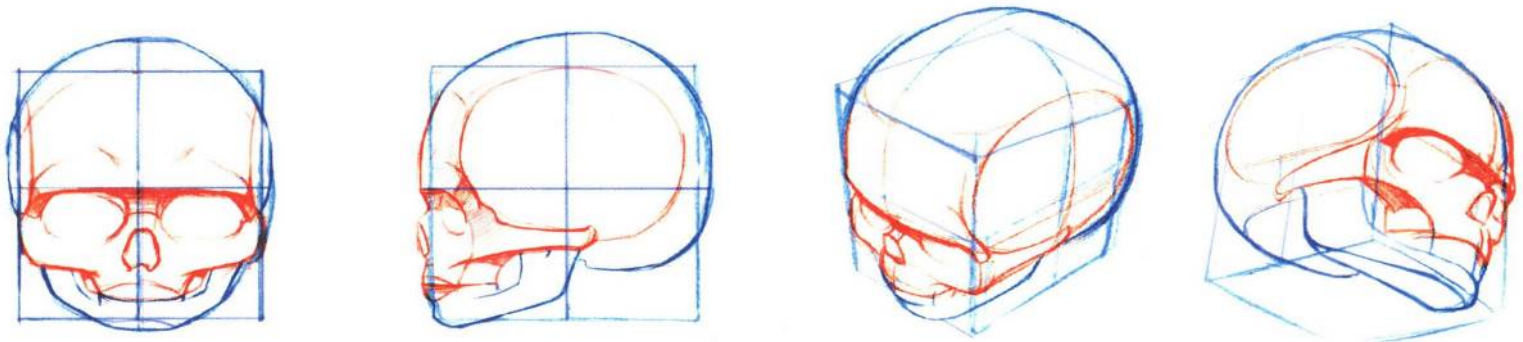
It is very important to practice the perspective of the cube. To better model the face, we need to carefully draw the face in the crosshairs of the cube.



The male face is more angular, with a larger orbicularis oris muscle and a wider jaw.



The female face is more rounded, with a smaller orbicularis oris and a narrower jaw.



Children have lower brow bones, fewer facial angles, smaller mouth bones due to underdevelopment, and smaller jaws in the whole head.

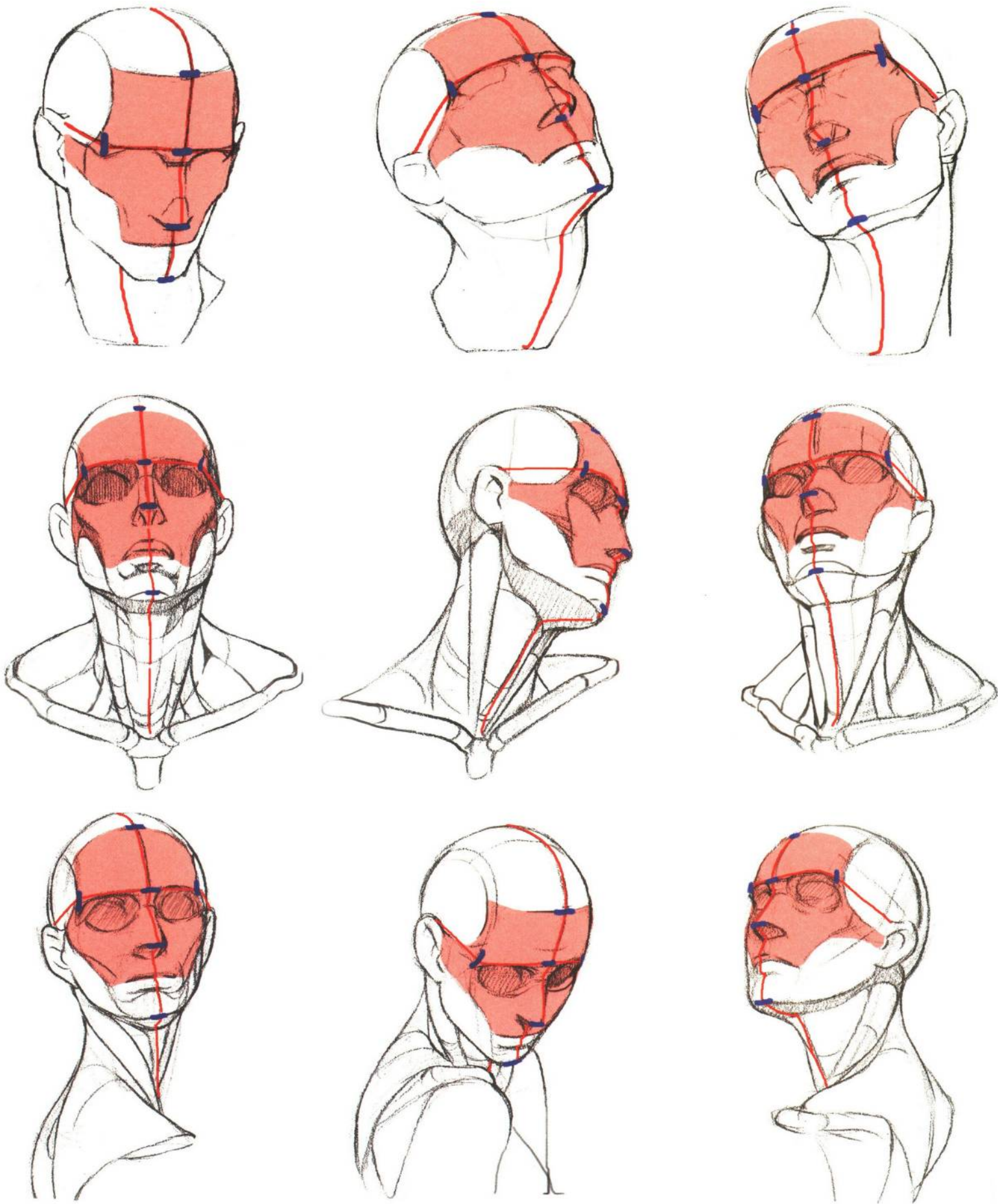




In real life, the facial bones of different people affect how we perceive their facial features.



When practicing bone drawing, we can focus on judging the location of the facial bones, focusing on drawing the perspective of the face clearly, and arranging the corresponding positions of the five senses on the basis of perspective.

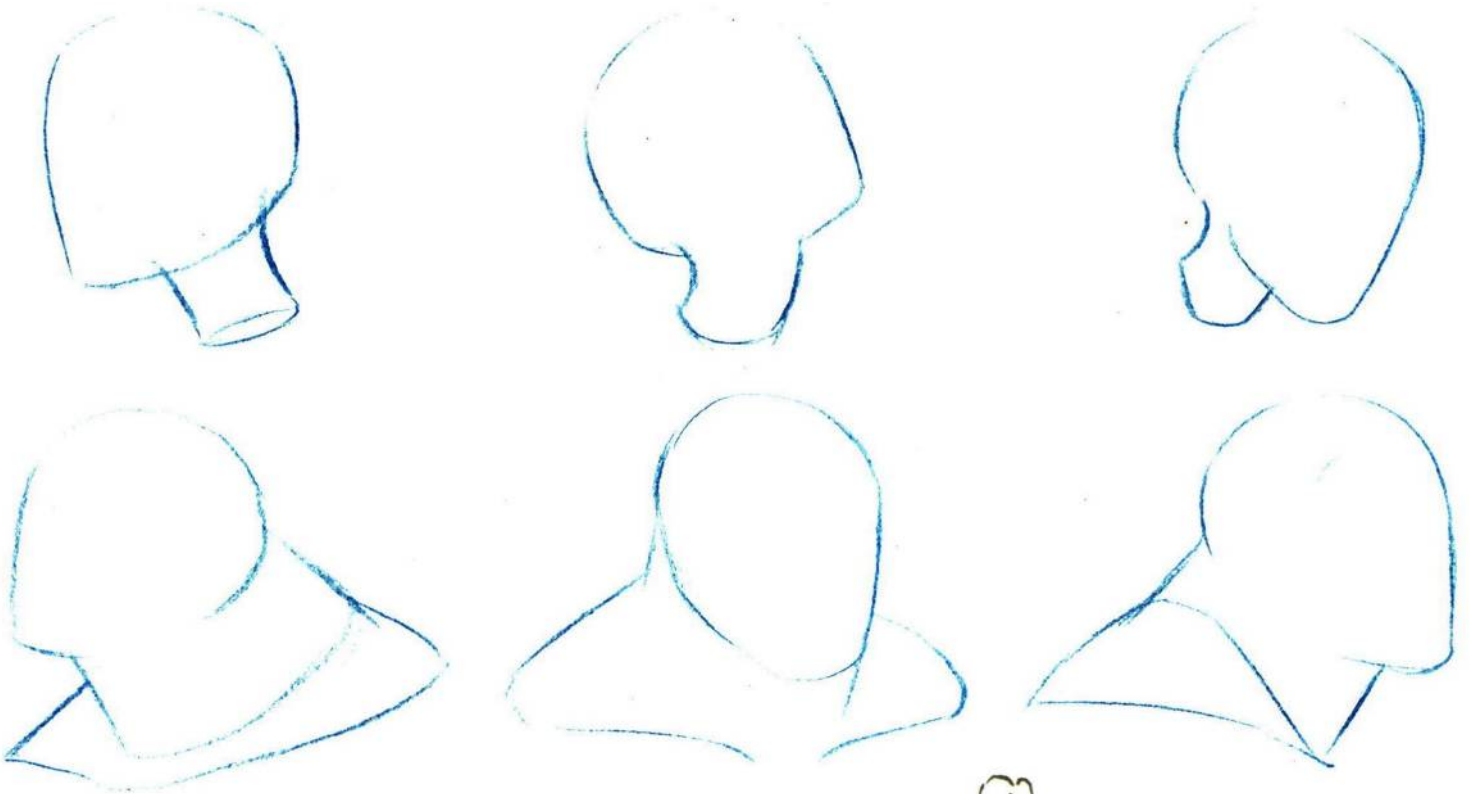


The shape and size of the face of anime characters are more exaggerated, we can utilize different facial features to show different exaggerated effects on the faces of different styles of anime characters.

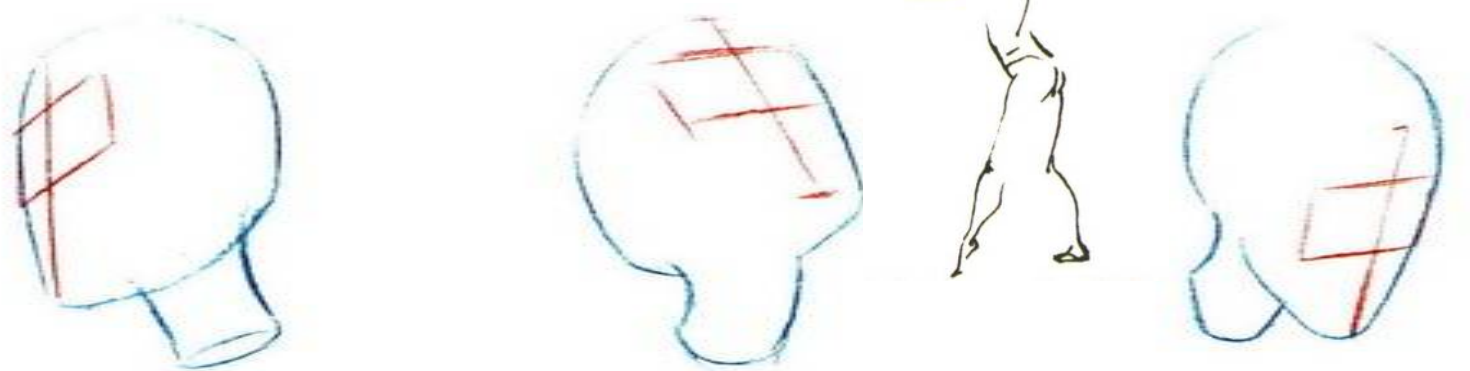


06 Facial features of the same character from different angles

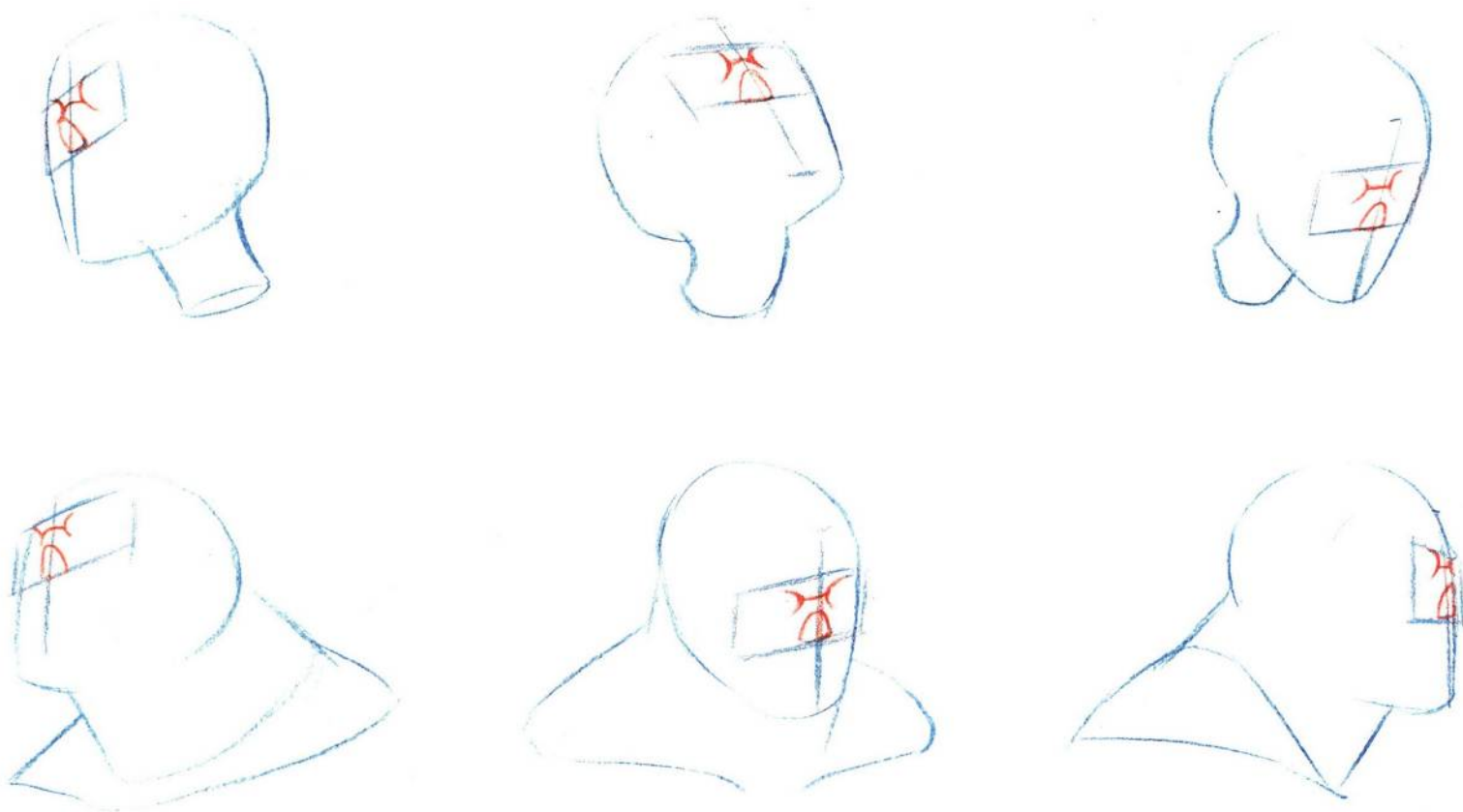
This section describes how to practice drawing face of the same character from different angles.



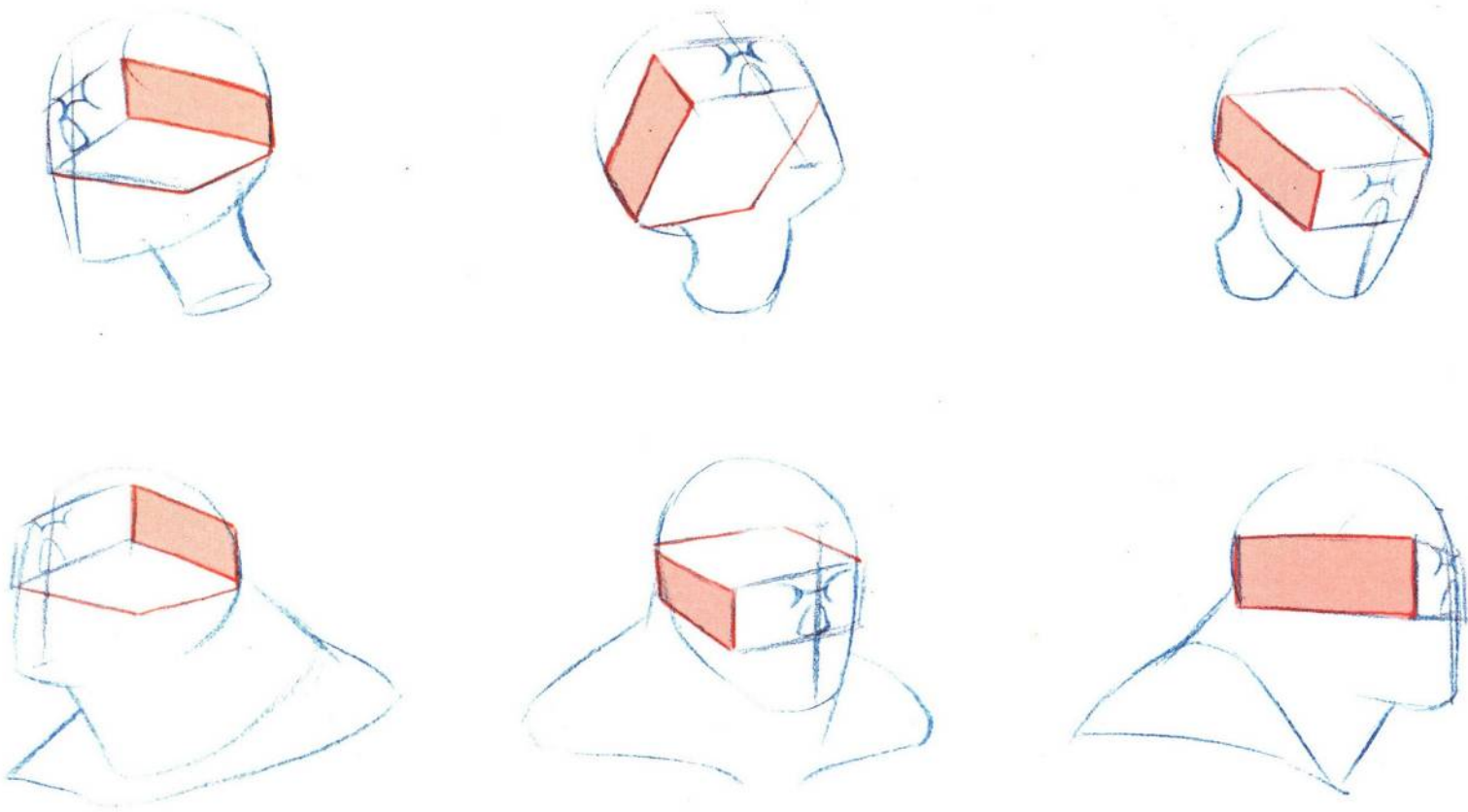
1. First draw the flat shape of the character's face.



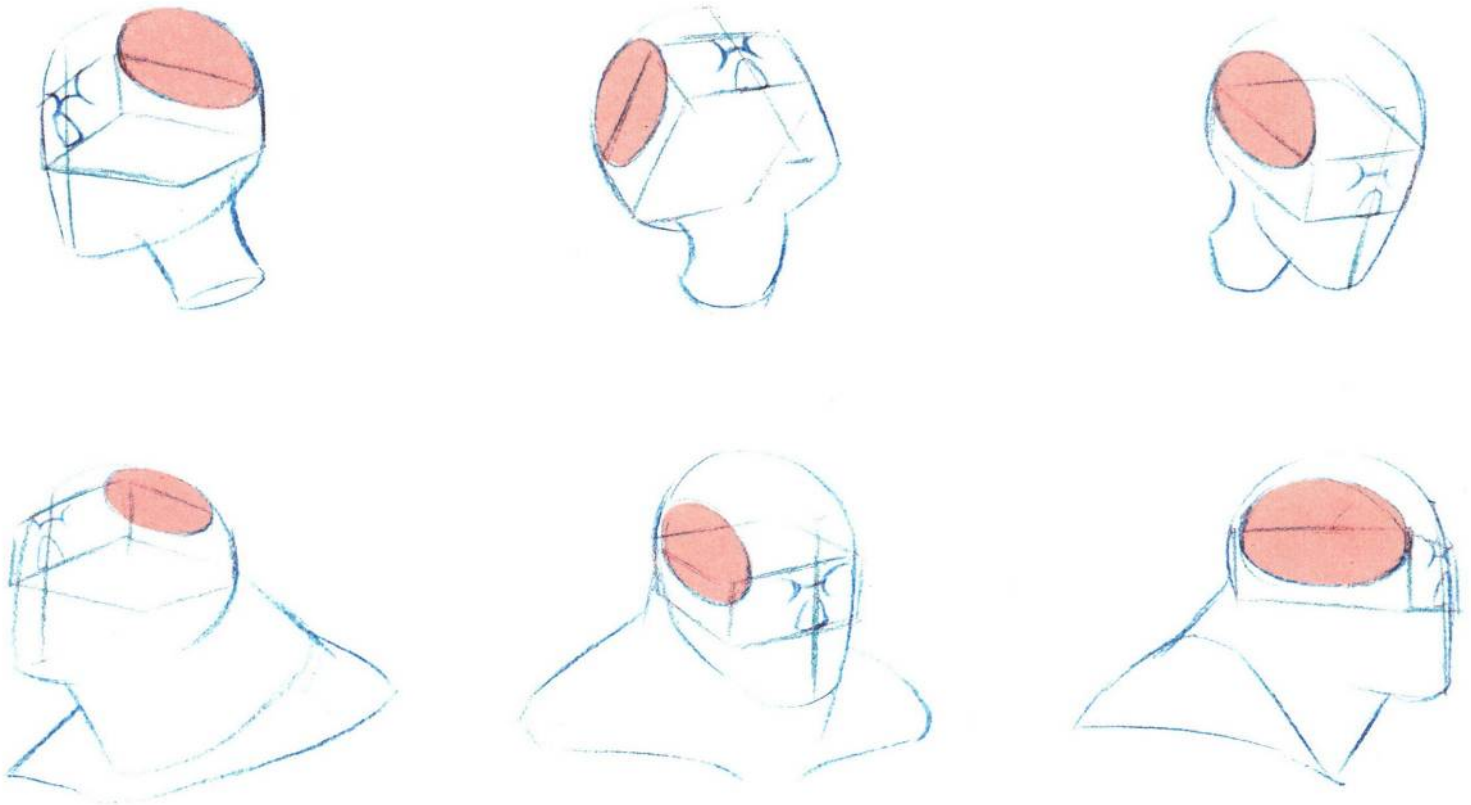
2. On the basis of the flat shape, mark the position of the "center" structure. Be careful to keep the aspect ratio of the "center" consistent when marking.



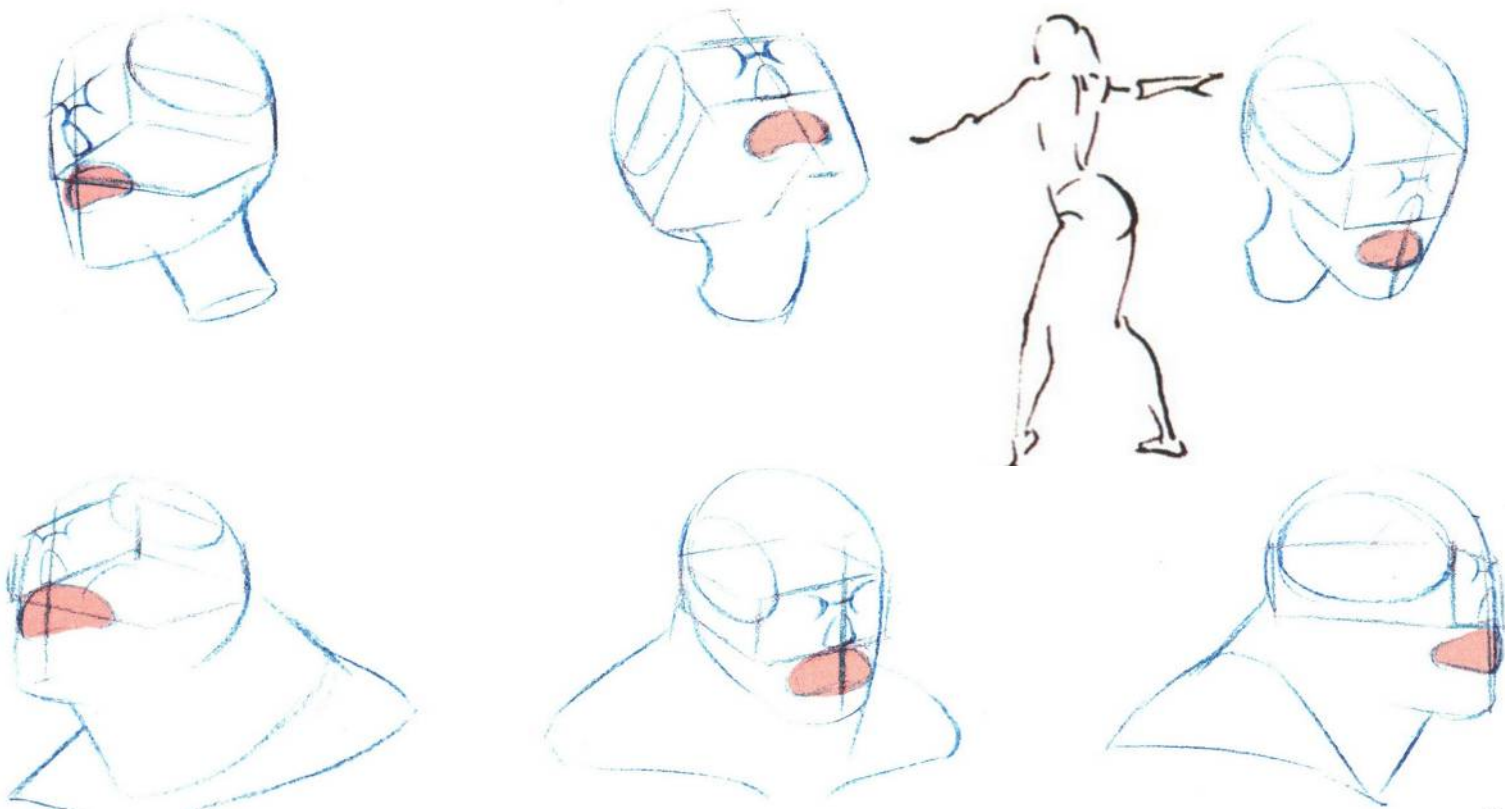
3. Within the area of the original character "中", find the center of the brow, similar to the letter "H". Next, underneath the center of the brow, locate the triangular area of the nasal bone.



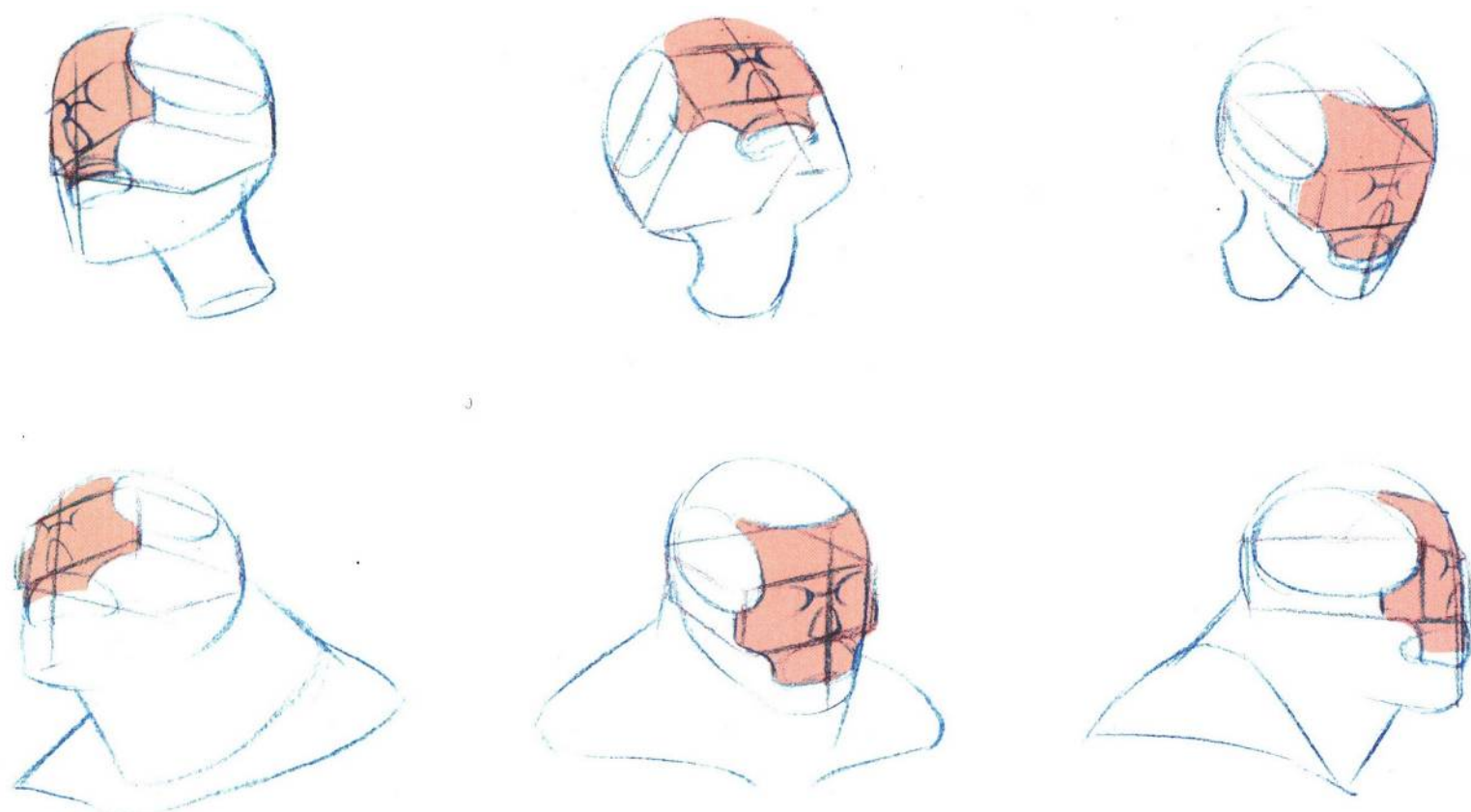
4. Within the area of the character "中", shape a rectangle that represents the thickness of the entire head, sort of like a brick set into the head.



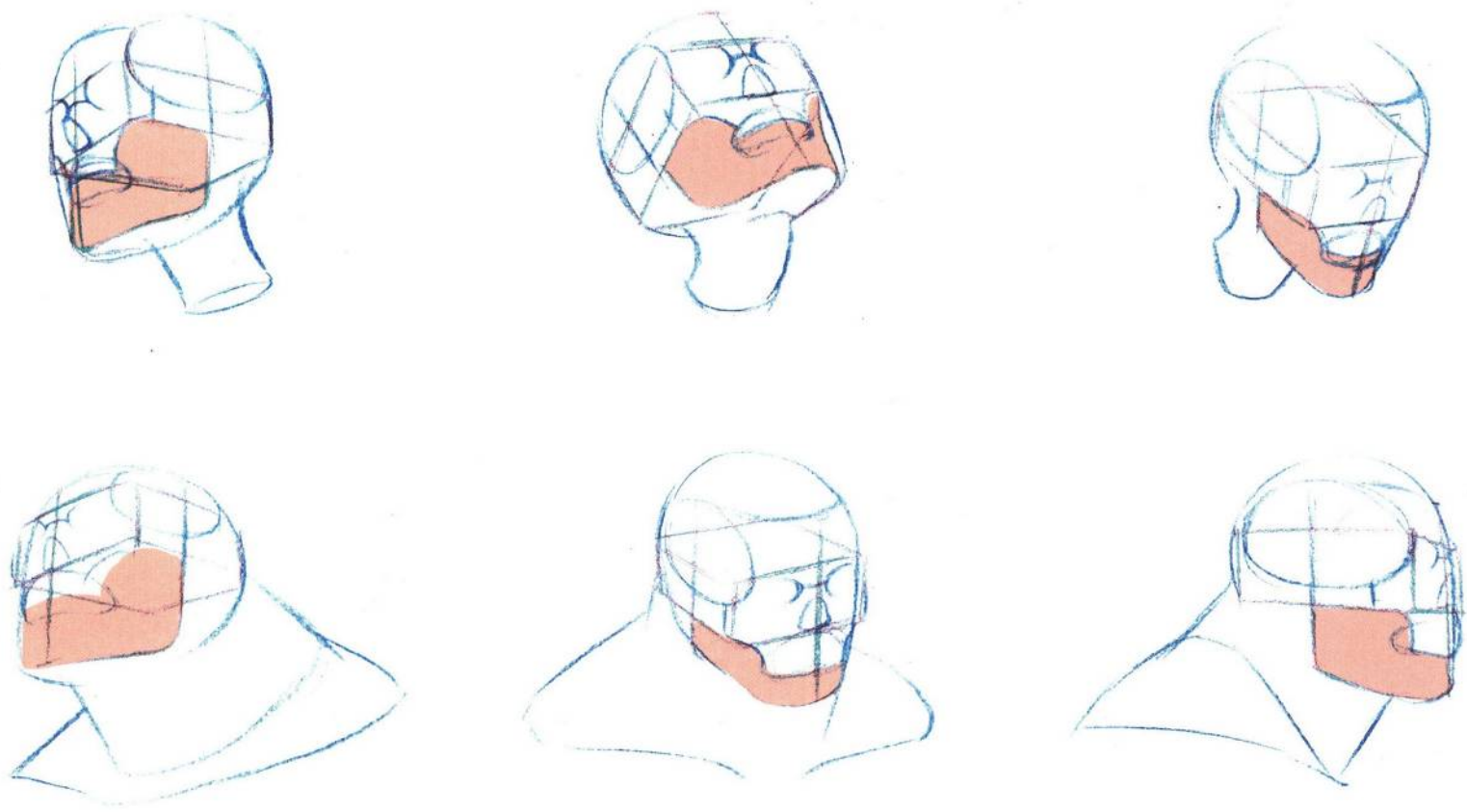
5. Draw the circle representing the temporal bone, this circle will help us to determine the exact location of the brow bone turn.



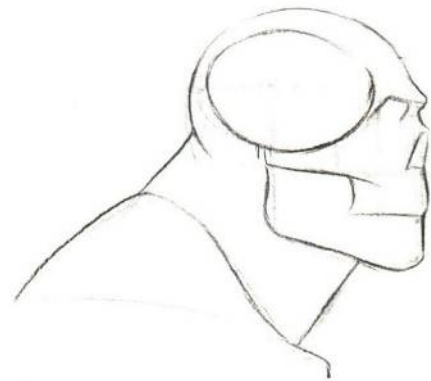
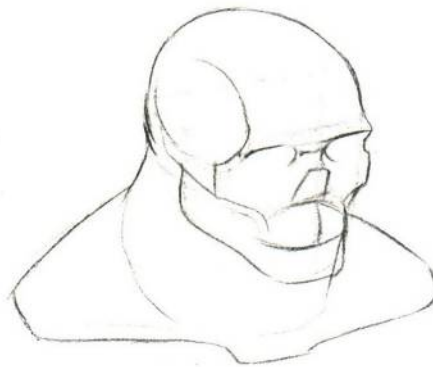
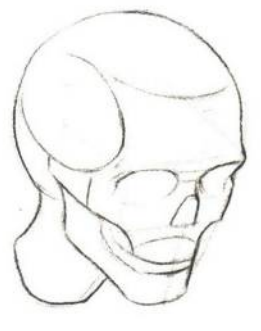
6. Shape the mouth and control the size of the mouth at all angles.



7. Connect the facial structures of the characters to form a "mask", taking care to ensure that the features of the "mask" are the same from all angles.



8. Mark the position of the chin area, and control the size of the chin at different angles, don't draw it too big or too small.



9. By removing the sketches, you can get the basic face of the character. This is the key step in drawing the character's facial features accurately.



10. Draw the character's facial features, such as ears, nose, eyebrows, and beard.



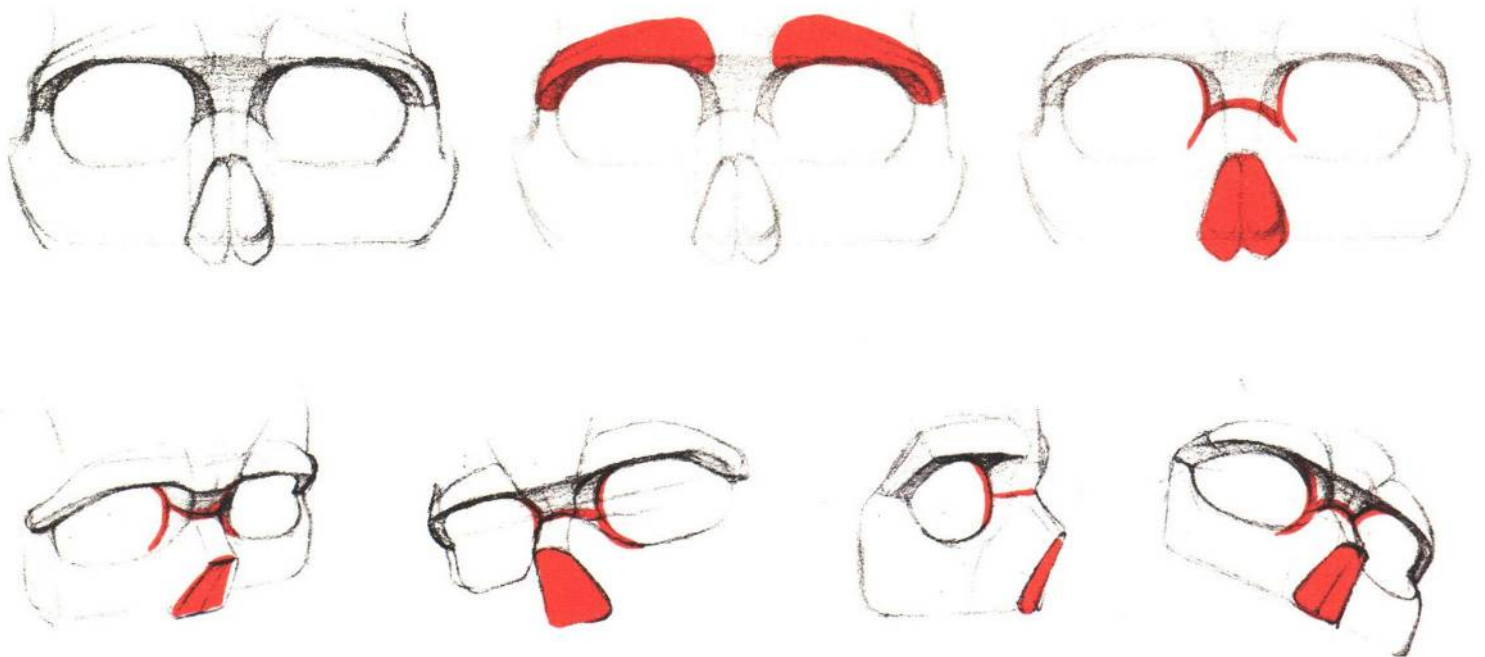
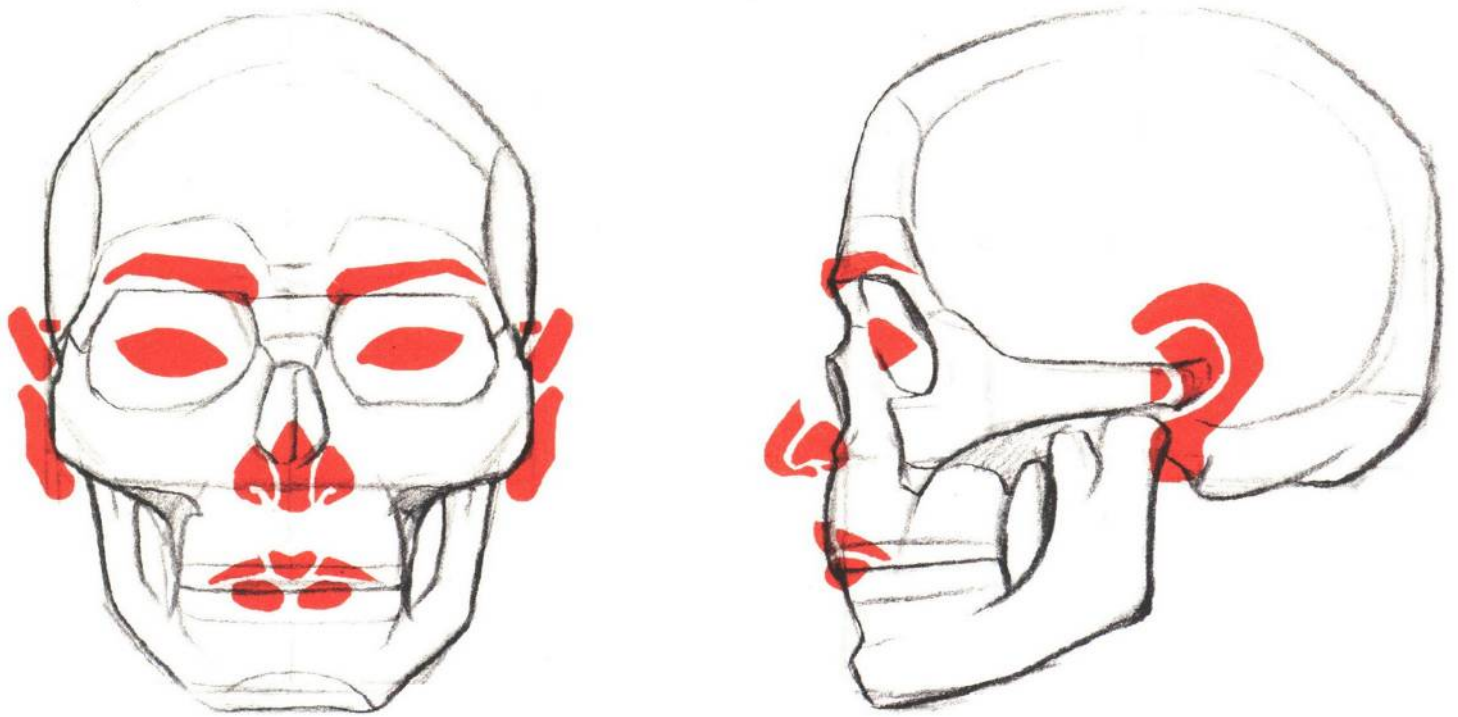
11. Draw the character's hairstyle on a flat surface, paying attention to how it changes from all angles. Then sketch the lines of the character's clothes.



12. By refining the details of the character, the facial features of the same character from different angles will be portrayed.

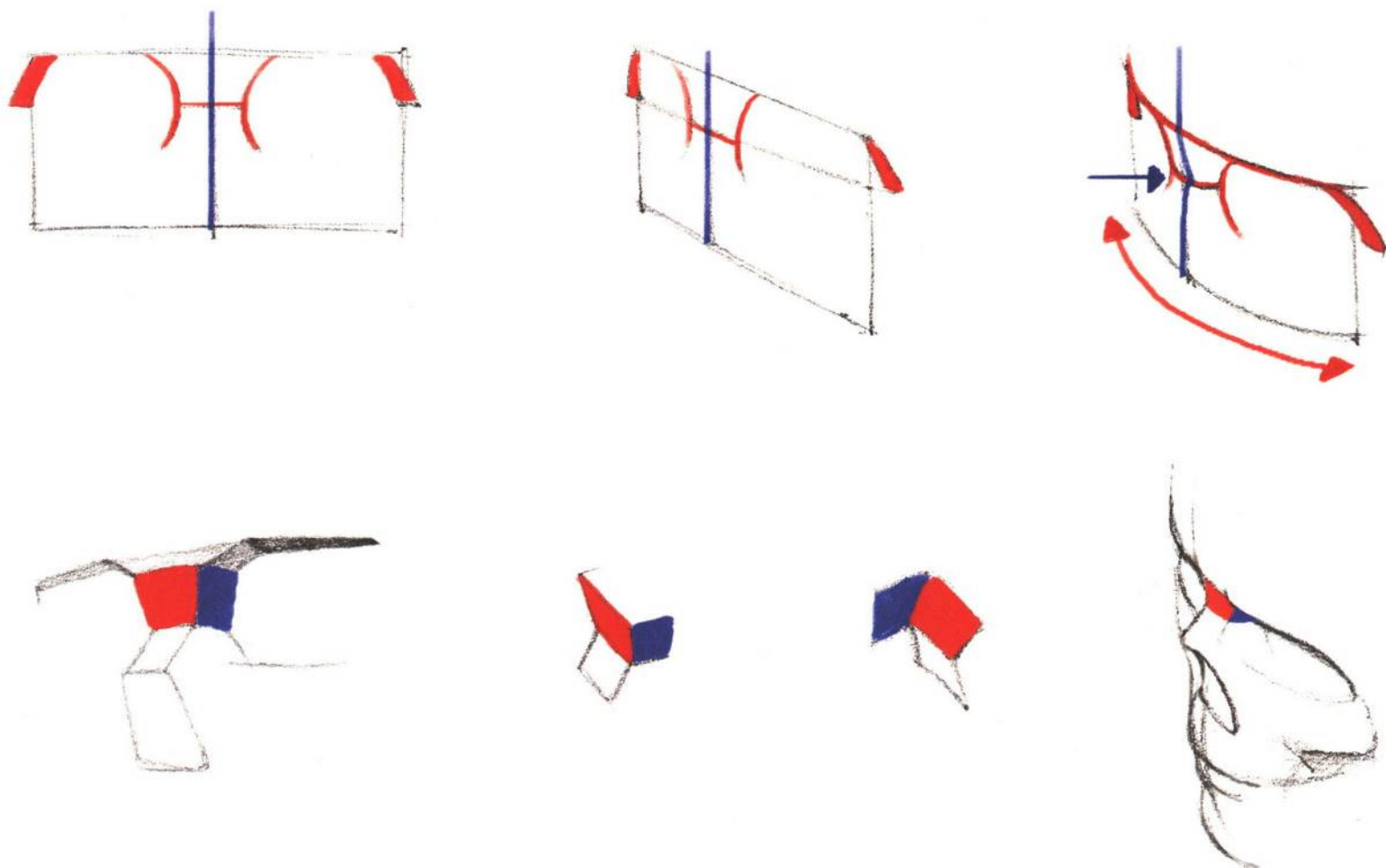
07 Modeling of the five features

The most important thing in drawing the five facial features is to find the corresponding positions of the five facial features on the bones of the head, and to draw the perspective of the five facial features accurately through different spatial expressions.

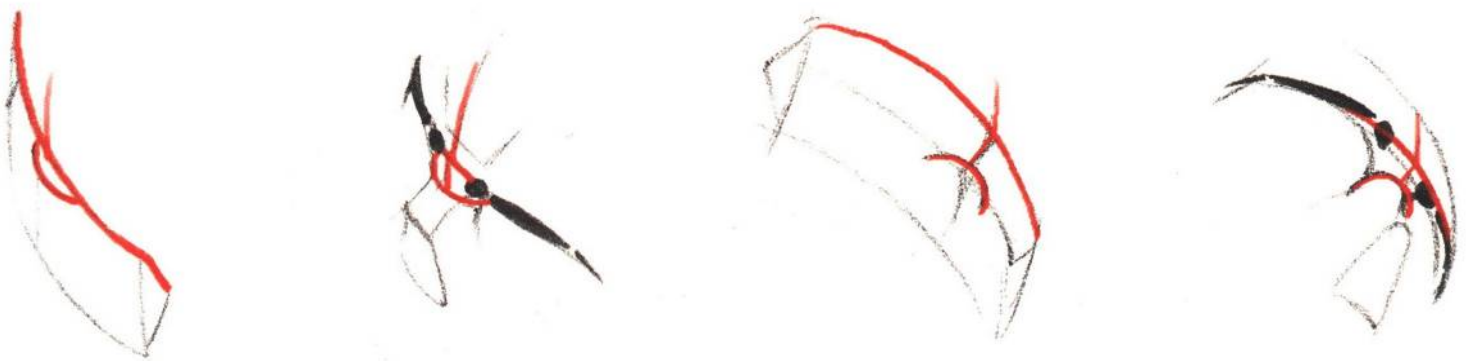


Shaping the undulation of the facial bones is a very crucial step, as long as the undulation of the facial bones is well shaped, it will be very easy to add the five senses on the basis of this. Pay attention to the perspective of the small "H" and the triangle at different angles when shaping the five features.

When we draw the bones of the eyebrows, we often make the mistake of drawing the arch bone very flat. In this case, we need to process the curvature of the whole face, so that the arch of the eyebrow bone has a certain degree of undulation.



When shaping the center of the brow, we can think of it as an angle. When drawing anime characters, this angle is weak, so we need to make it three-dimensional when drawing. Once the arch bone and the center of the brow have been dealt with, shaping the eyebrows and eyes will be very easy.

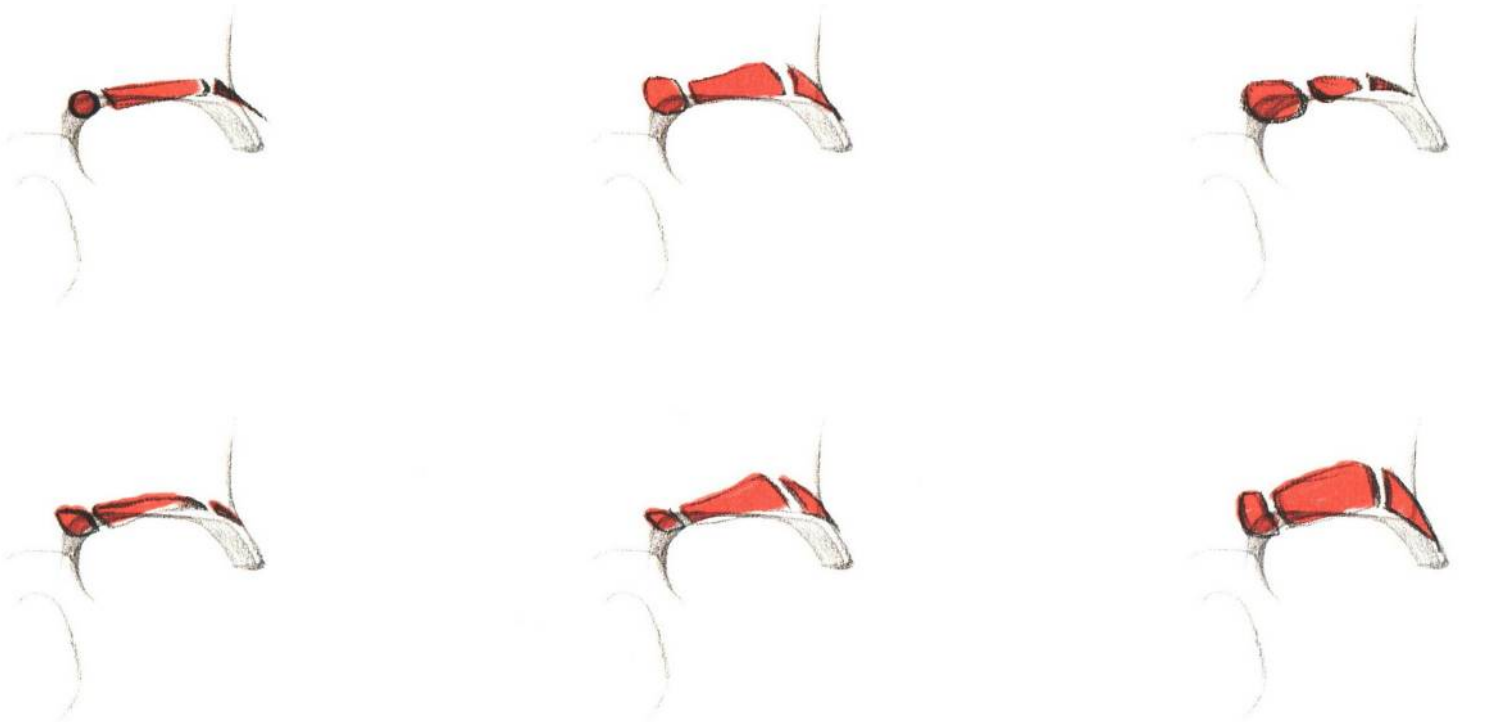


Many people are very casual in shaping their eyebrows, but eyebrows are very important in expressing facial features, so it is important to make them conform to the curvature of the arch bone, and to draw the perspective of the eyebrows accurately.

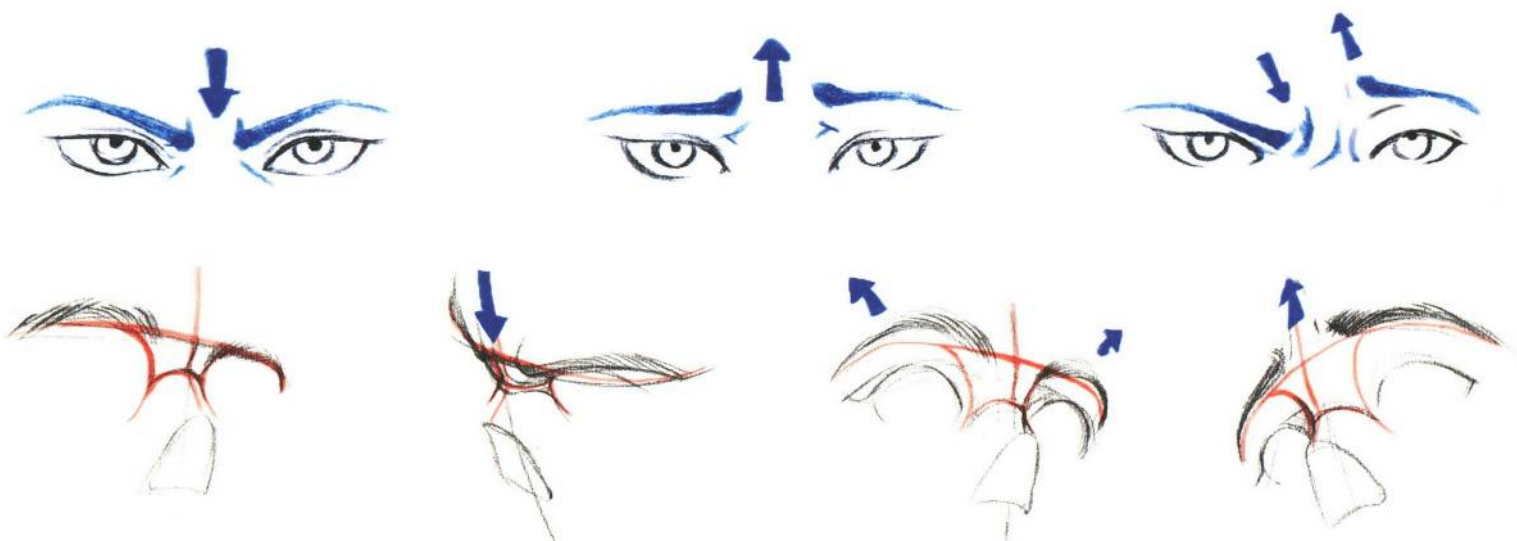




Eyebrows can be divided into three parts: the head, the body, and the tip. The transition from the head to the tip of the brow changes often, and the brow follows the curve of the arch bone.

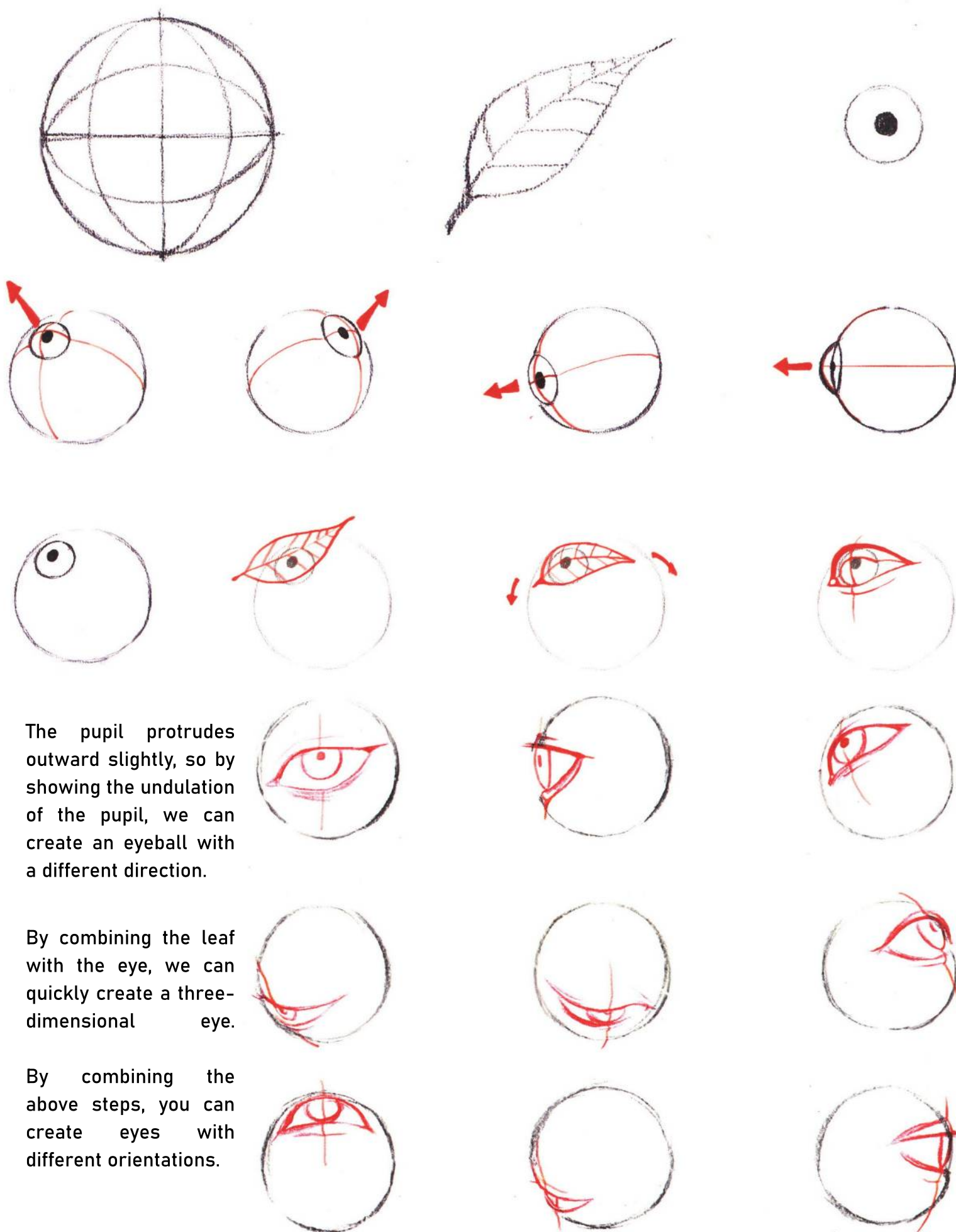


Different characters have different eyebrow features, so we can change the head, body, and tip of the eyebrow to give it a different look.



The perspective of the eyebrow is difficult to grasp, and the position of the center of the eyebrow will change with the mood of the character to express the strength. We need to learn how to control the perspective of the arch bone and the position of the center of the eyebrow in order to express the emotions of the character.

The structure of the eye can be simply understood as a combination of three relatively simple and understandable shapes: the sphere, the leaf, and the eyeball.

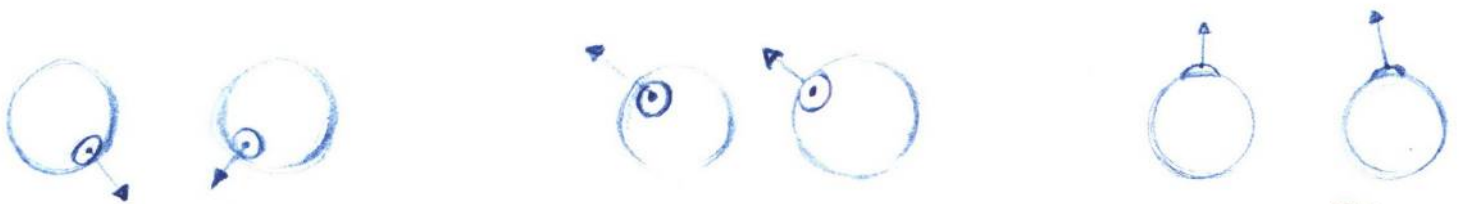
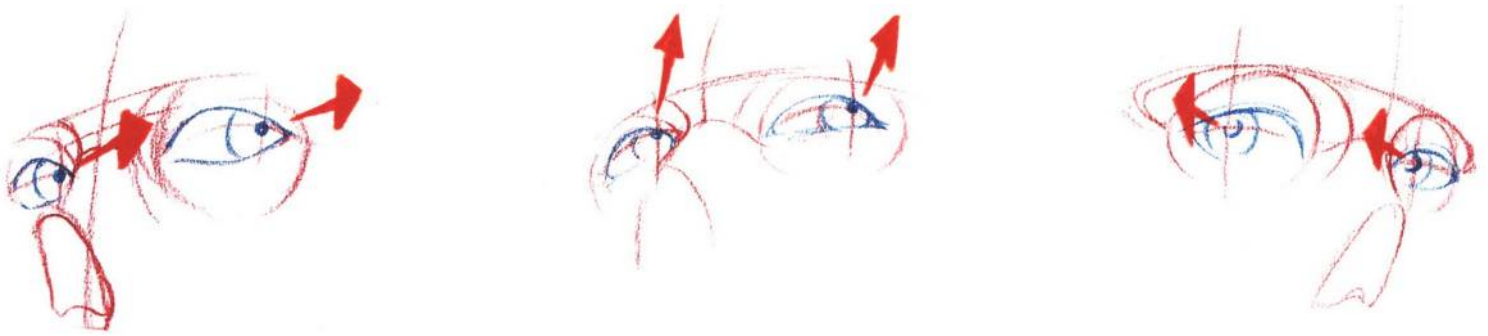


The pupil protrudes outward slightly, so by showing the undulation of the pupil, we can create an eyeball with a different direction.

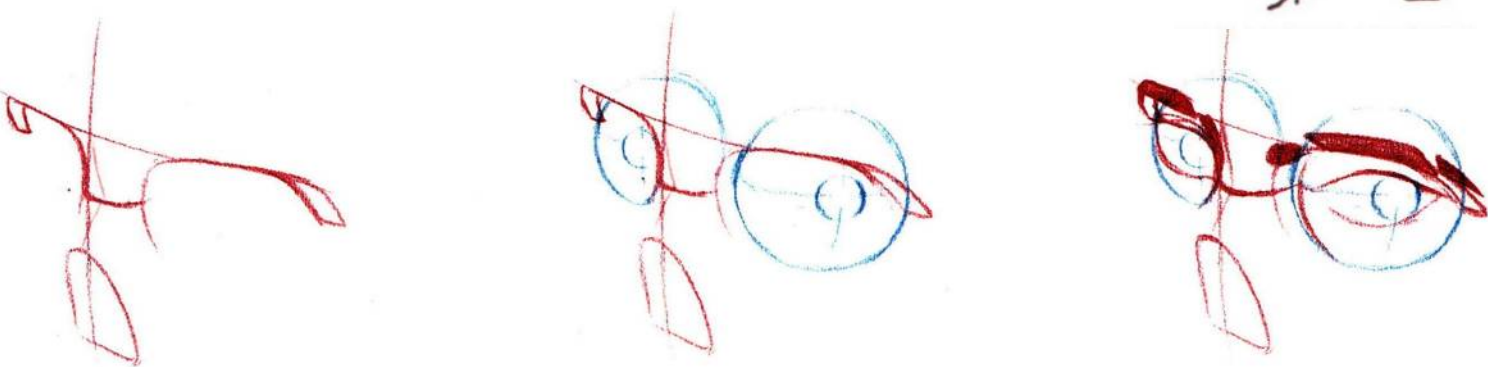
By combining the leaf with the eye, we can quickly create a three-dimensional eye.

By combining the above steps, you can create eyes with different orientations.

Focused eyeballs make the eyes appear more dynamic, but if the two eyeballs cannot meet at one point, the eyes will appear to be slack.

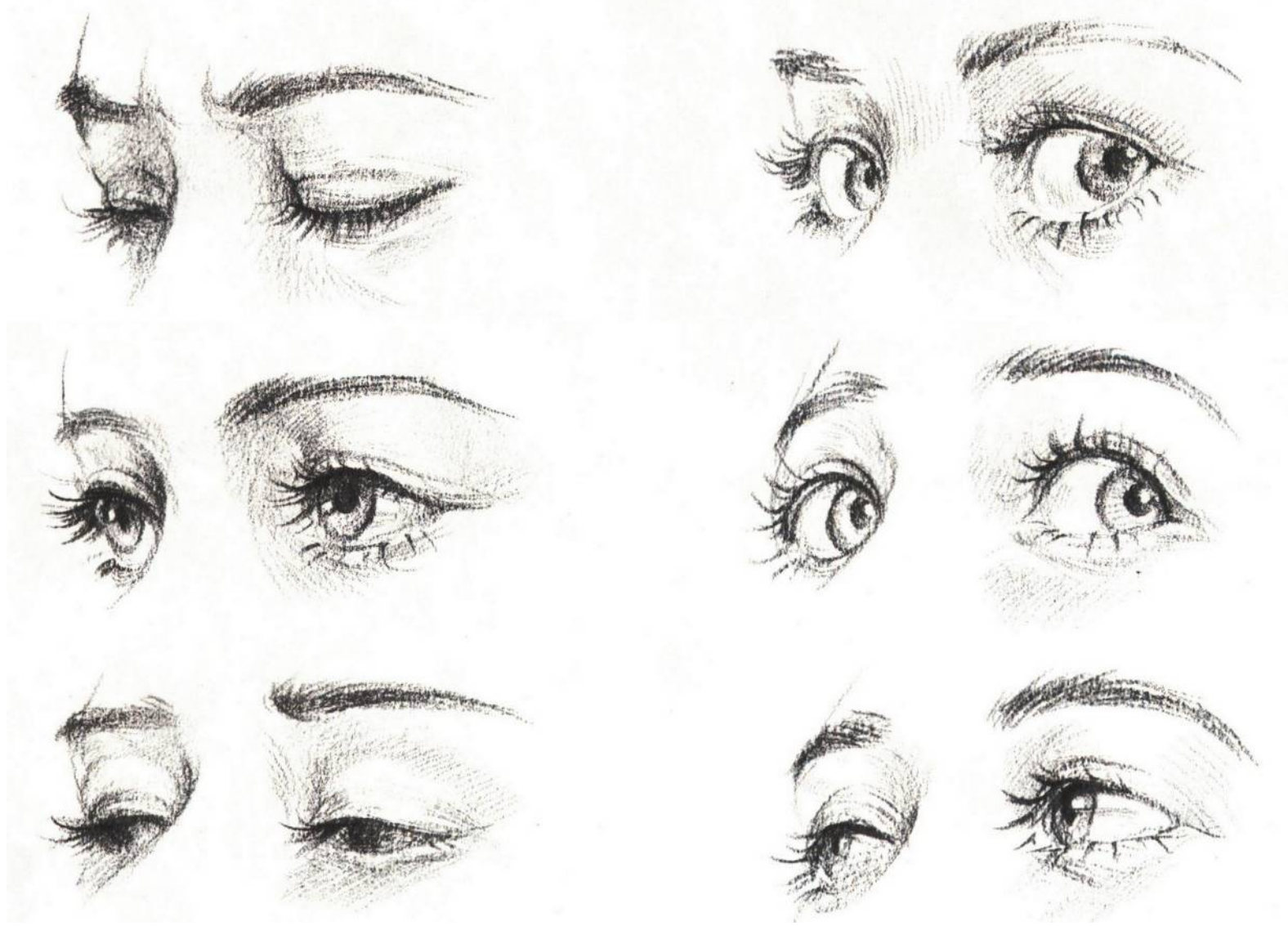


Steps to draw a pair of eyes: first determine the relationship between the undulation of the arch bone, determine the position of the two eyes in the eye socket, pay attention to make the two eyes focused on the line of sight at one point; then draw the form of the eyebrows and the leaf perspective state, on the basis of which to shape the trend of the eyebrows and the details of the eyes; and then add shadows, so that the eyes appear to have a sense of form; and finally removed from the sketch, you get a pair of three-dimensional eyes.

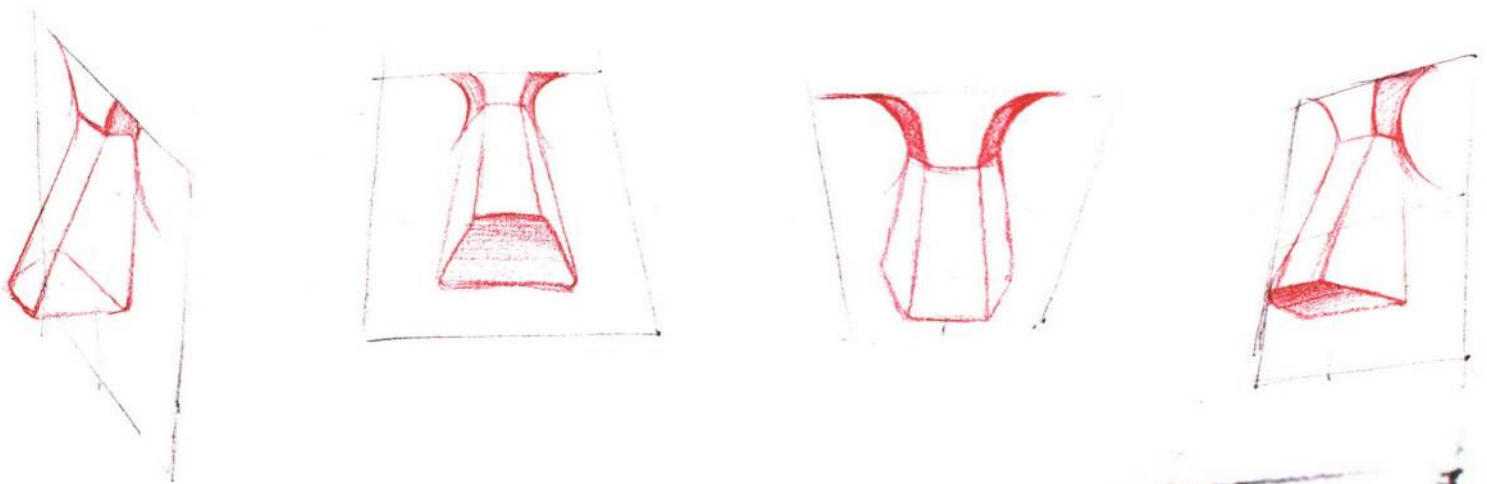




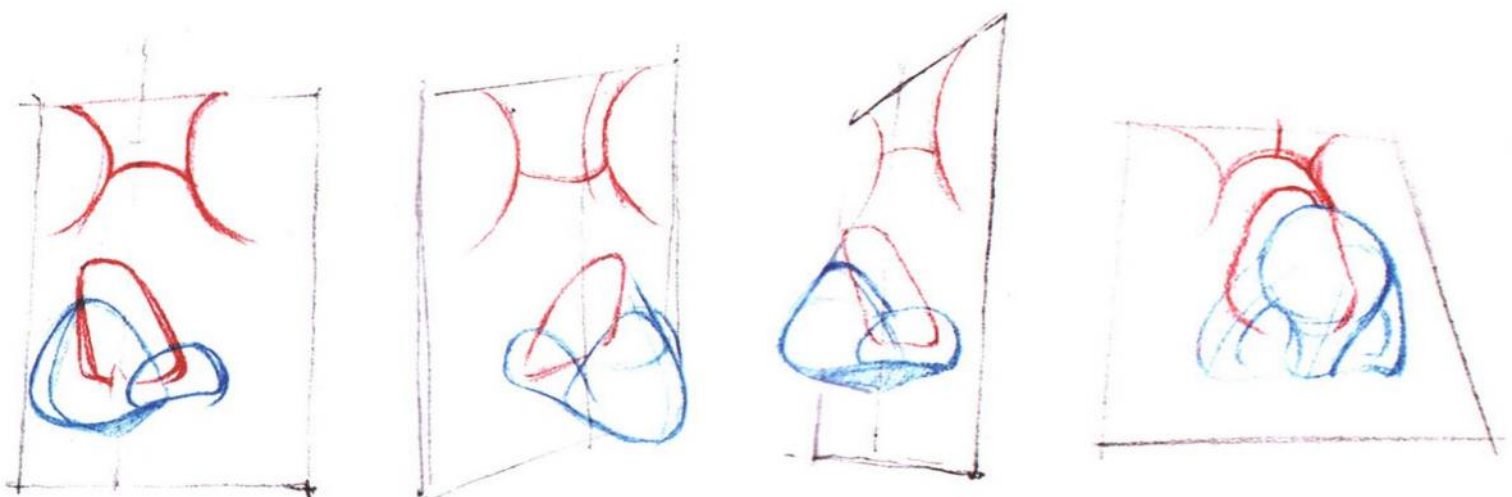
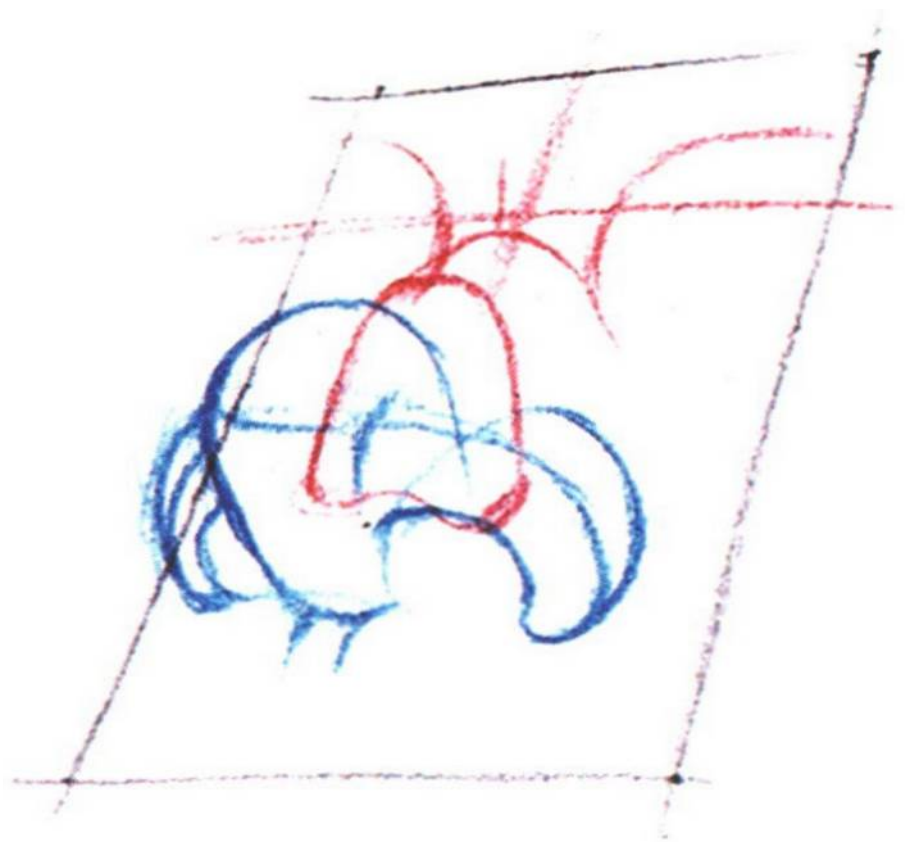
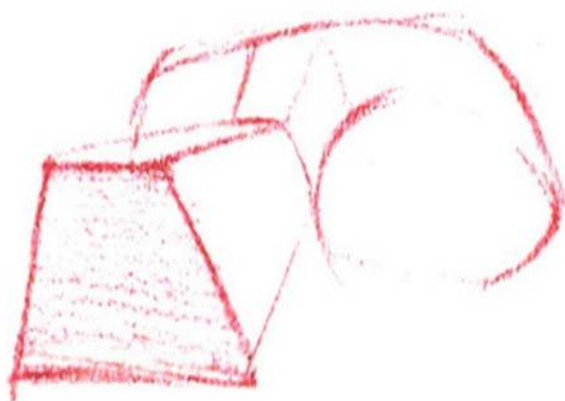
We can also look at people in our lives or photographs and copy the eyes in different orientations, which will help us to create more vivid eyes in the subsequent modeling of the eyes.



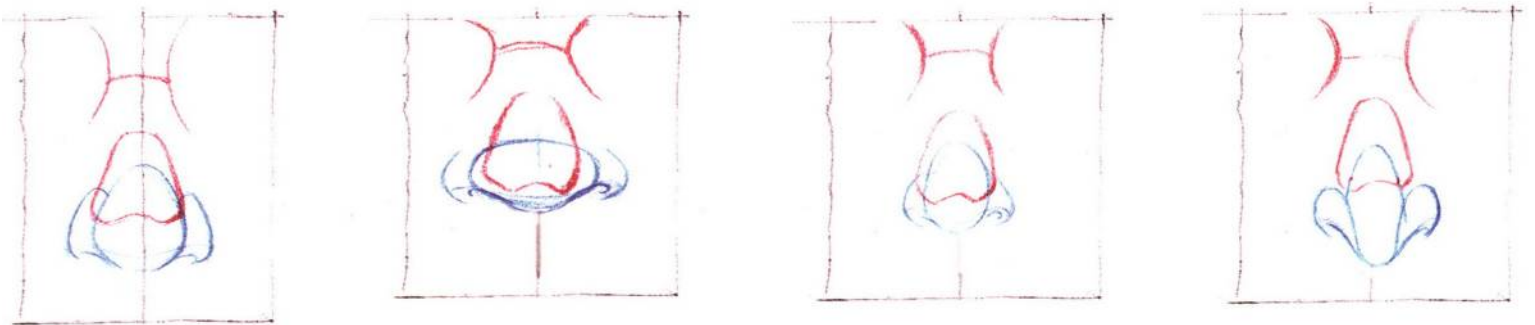
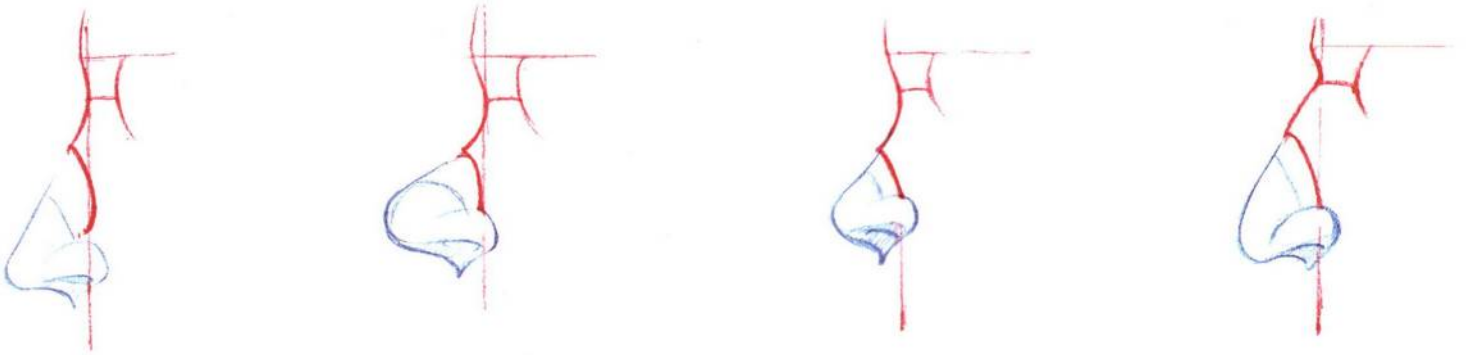
We can think of the nose as a trapezoid with a rectangular plane underneath it. By combining the trapezoid with the rectangular plane of the face, we can easily draw the perspective of the nose from different angles.



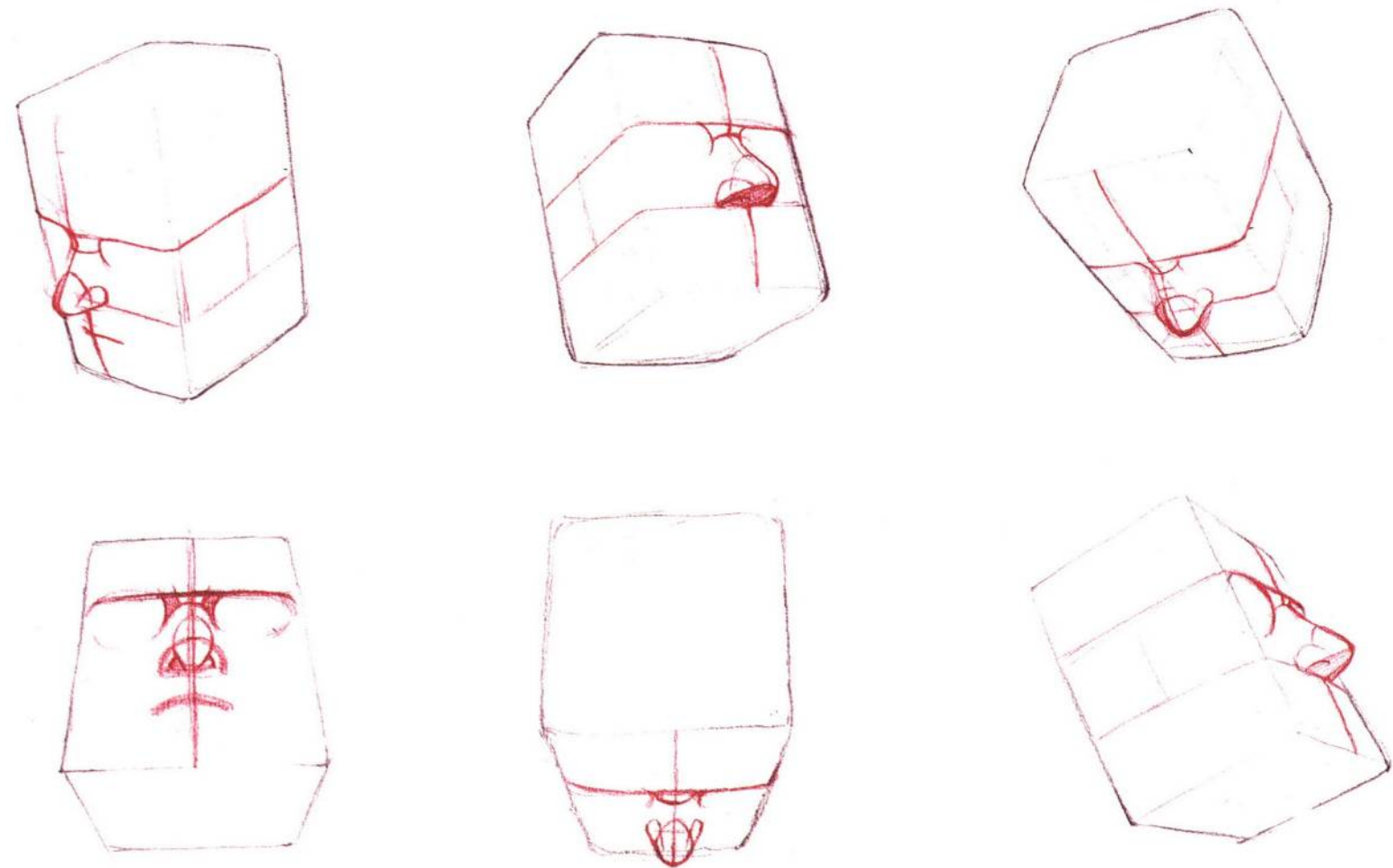
The most critical point in shaping the nose is the tip of the nose, which is divided into the tip and the wing of the nose. If we can arrange the position of the tip and the wing of the nose under the trapezoidal shape, then the shaped nose will look more realistic.



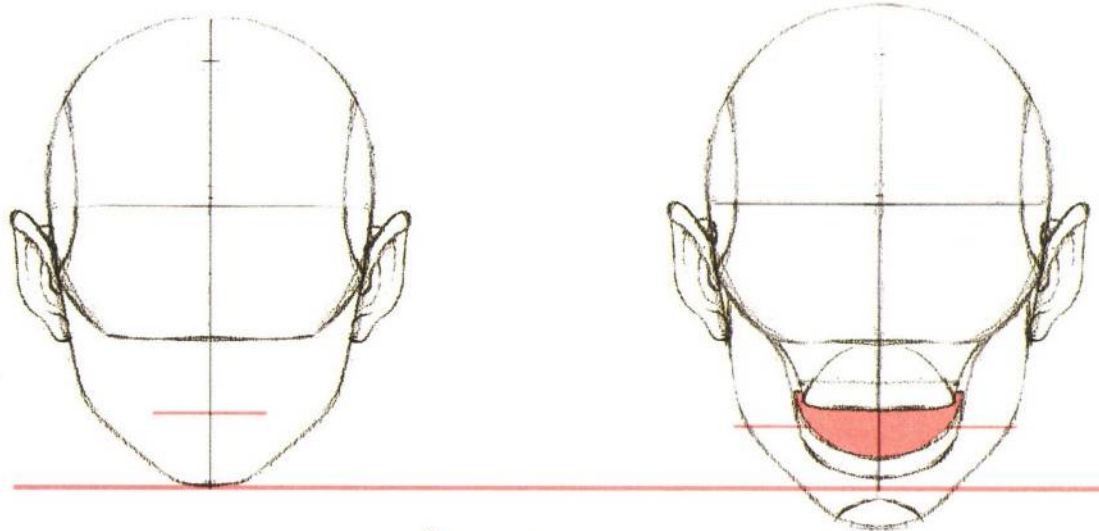
Different characters' noses have different shapes, and by skillfully changing the shape of the nose tip and nose wings, we can draw noses with different characteristics.



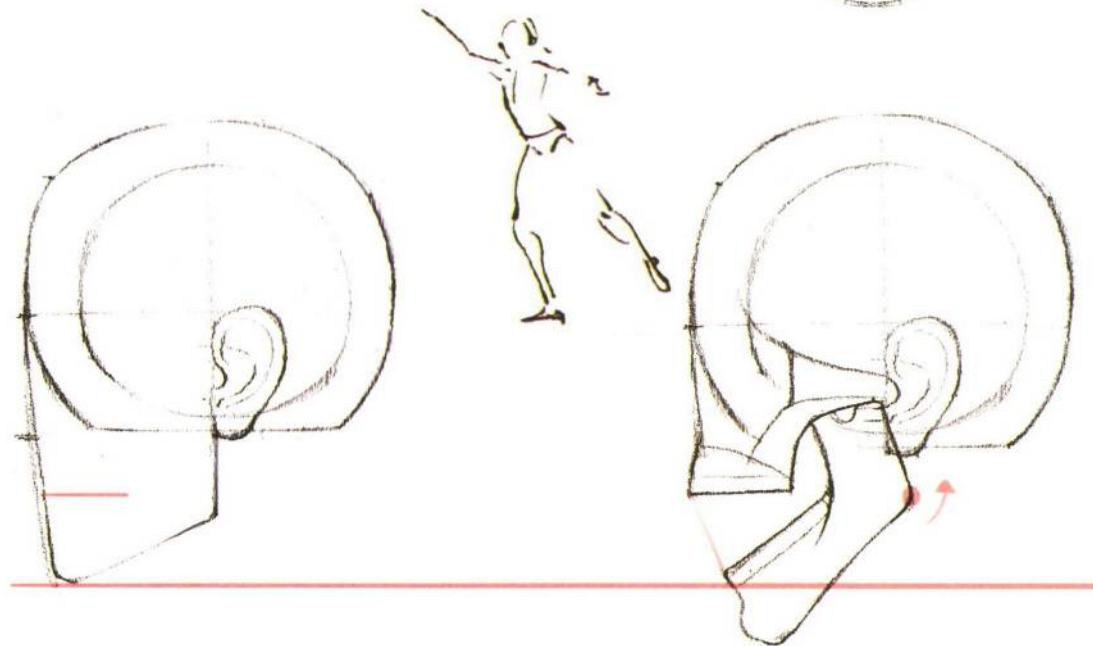
Noses with different orientations also have different shapes, and by mastering the rules, it will be easier for us to shape the noses later on.



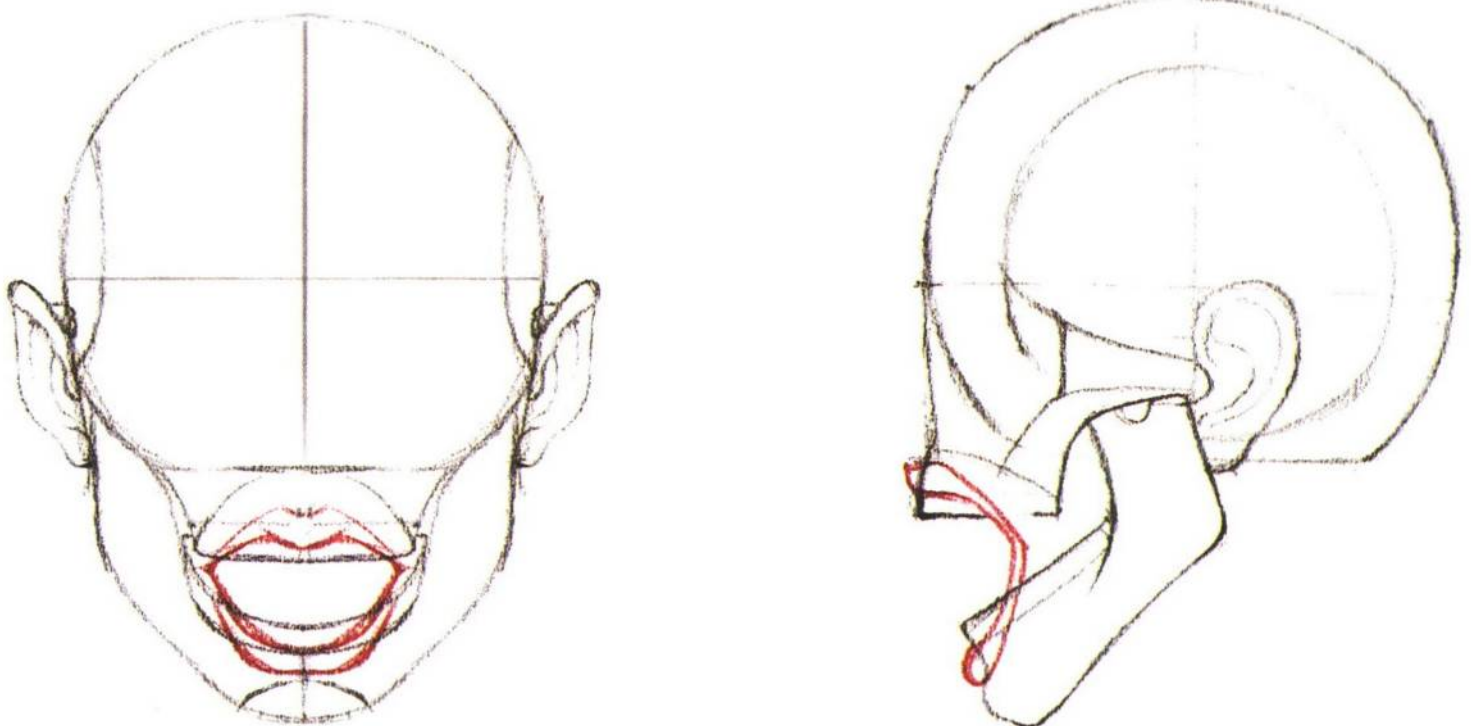
The mouth is a part that is easily neglected, and we often simplify the mouth when portraying anime characters. Before simplifying, we need to understand the state of the mouth after opening and its impact on the face. ---- The lower part of the tooth bed will have obvious changes, and the face will be lengthened.



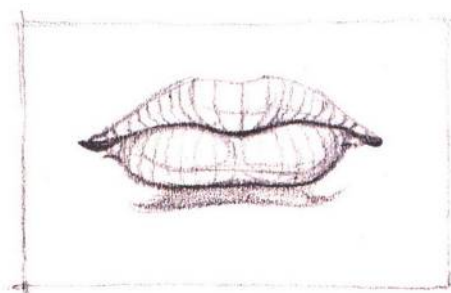
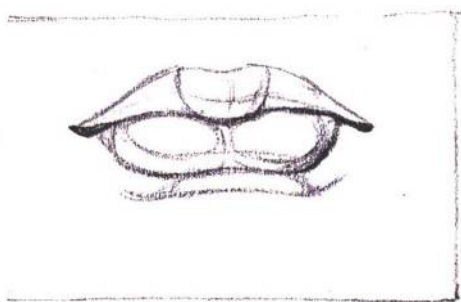
When viewed from the side, the mouth is relatively normal in length when it is closed, and when it is open, the open part of the mouth has a certain curvature, and the trajectory of the mouth moving backward and downward is also a curved line.



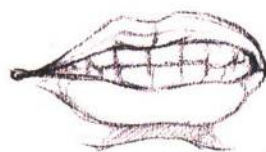
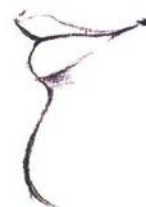
By drawing the lips in perspective like the one on the right, the mouth will have a sense of form and space.



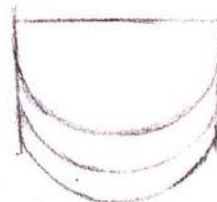
When shaping the lips, we should pay attention to the shape of the beads on the lips, and properly shaping the form of the beads can help us better express the mouth.



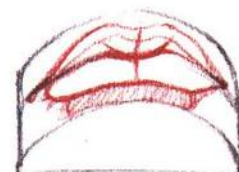
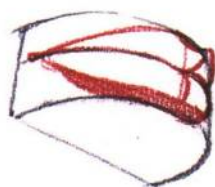
The mouth is a very important organ that we use to express our communication, and it will show different states in different situations. When shaping the mouth, we need to pay attention to the position of the corners of the mouth as well as the specific shape of the lip crease and lip line.



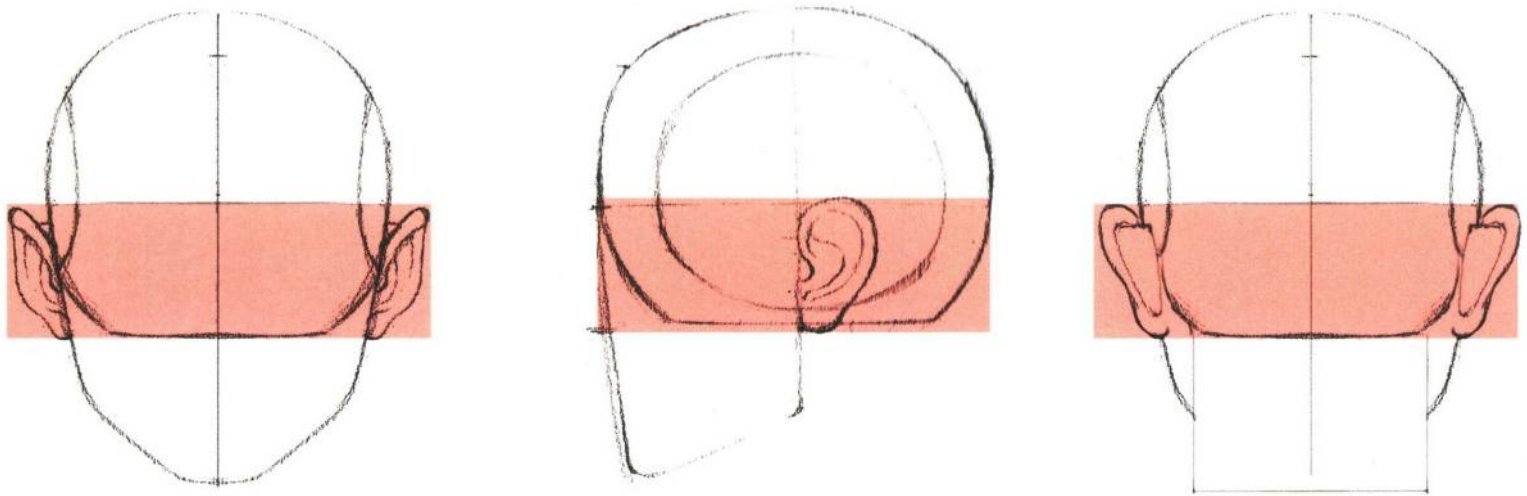
To get the perspective of the mouth right, we can try to do the following denture perspective exercise, first draw the upper and lower dental beds in the correct perspective.



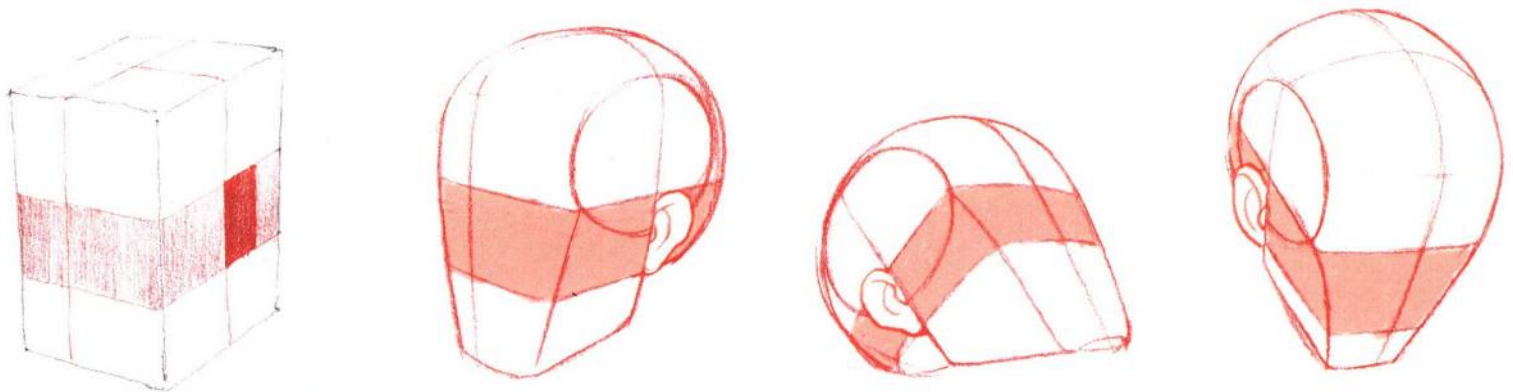
On this basis, add the lip seam, lip line and lip beads, pay attention to the corners of the mouth, lip line and lip beads of the three-dimensional sense, you can get a more realistic, three-dimensional mouth.



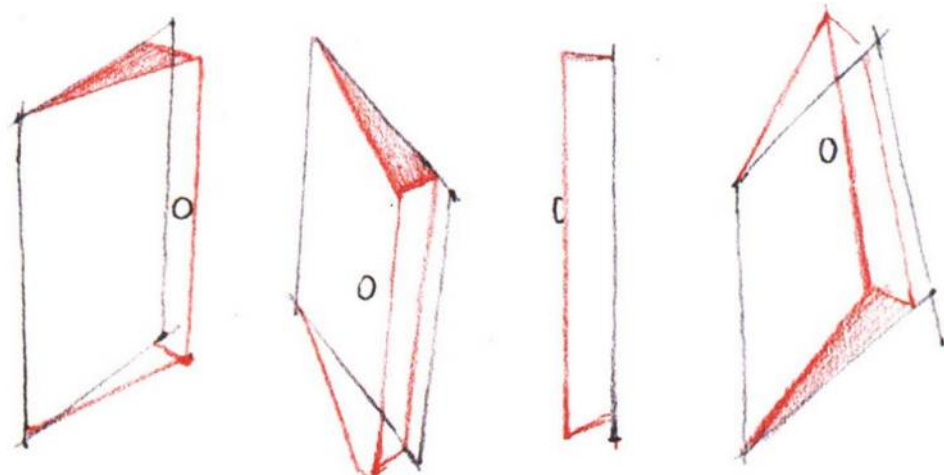
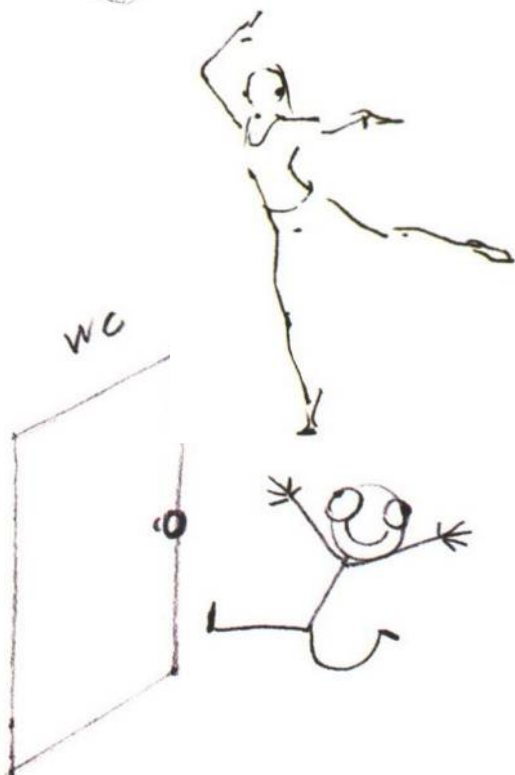
The ears are located in an important area of the face from the arch bone of the eyebrow to the base of the nose.



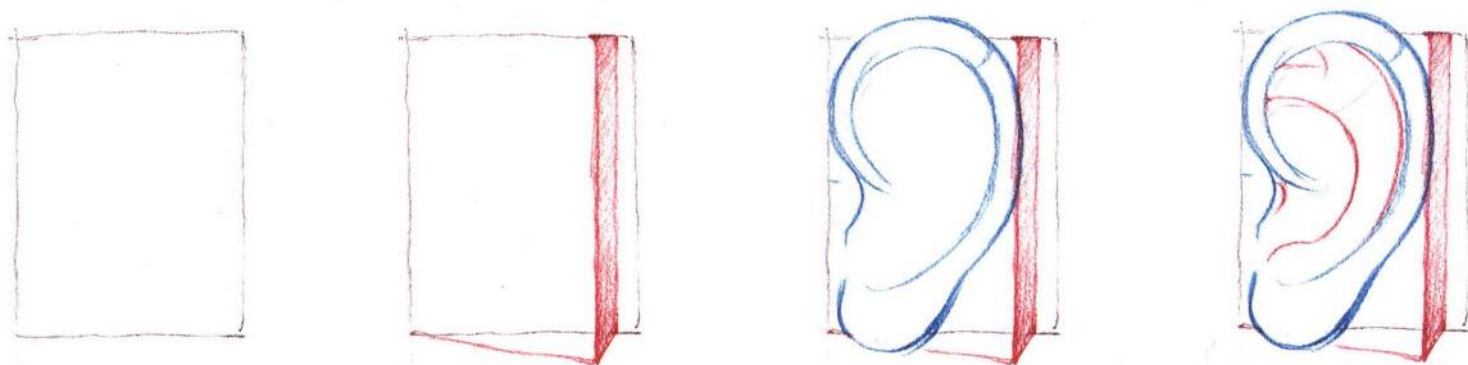
As you can see from the rectangular shape, the ear starts at the center and back of the side. As long as we can express the perspective of the rectangle, we can quickly find the exact position of the ear in different perspectives.



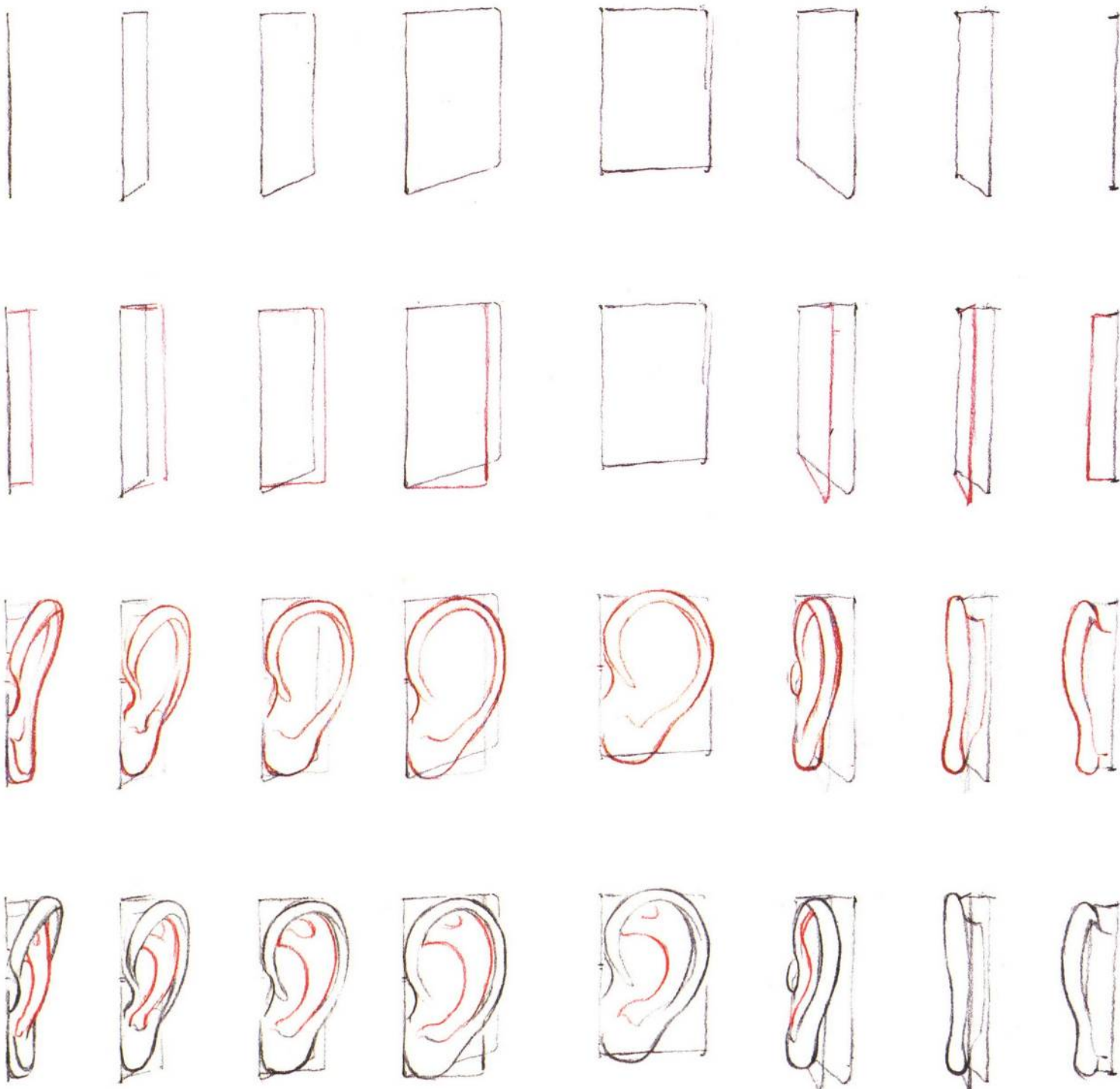
The ear is shaped like a slightly open door, protruding slightly outward from the front side plane.



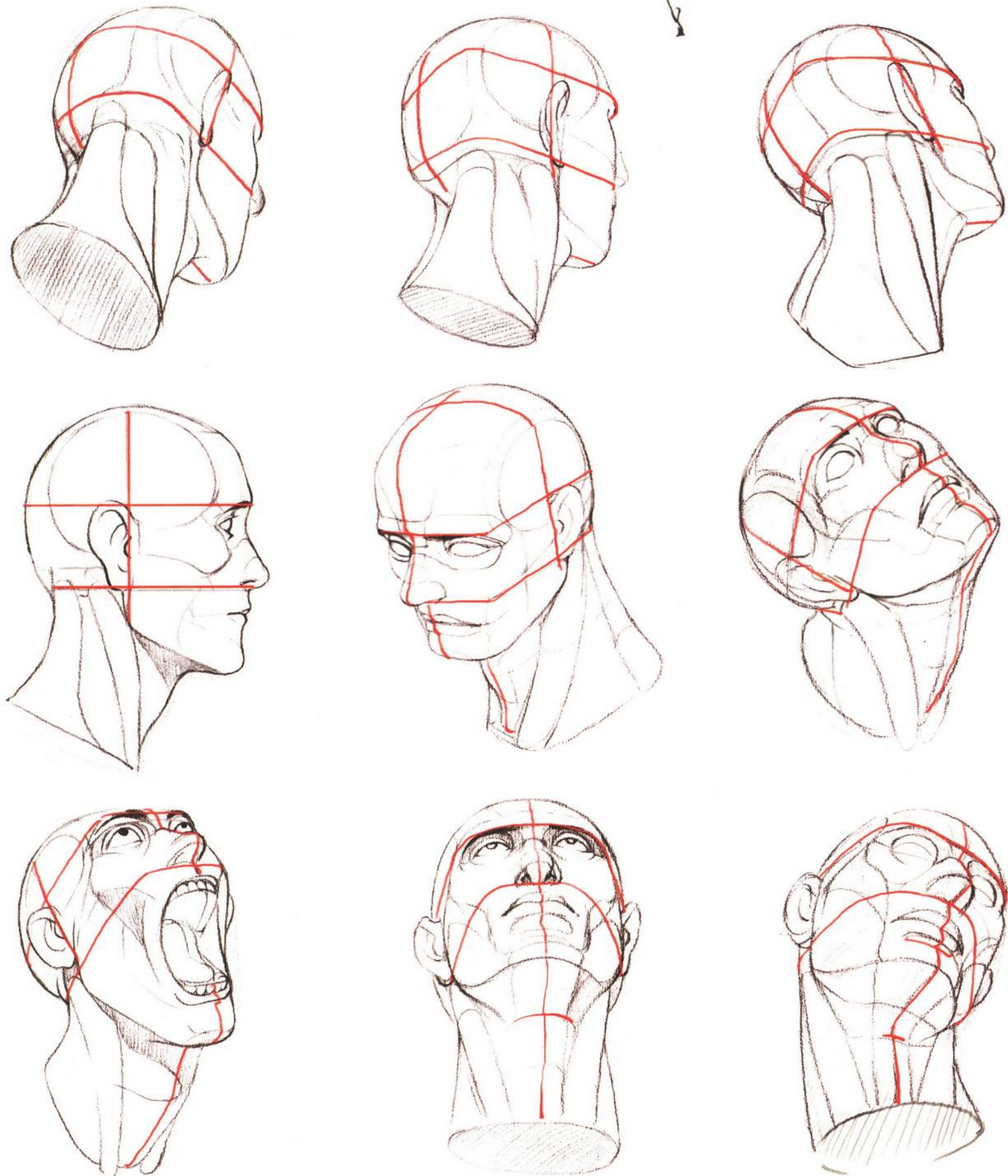
The ear can be shaped by first defining a surface and then drawing an open door. On the basis of this door, we can shape the outside of the ear, and then we can shape the small structures inside it.



In order to shape the ear better, we can draw the door at different angles, and draw the perspective of the ear at different angles within the door.



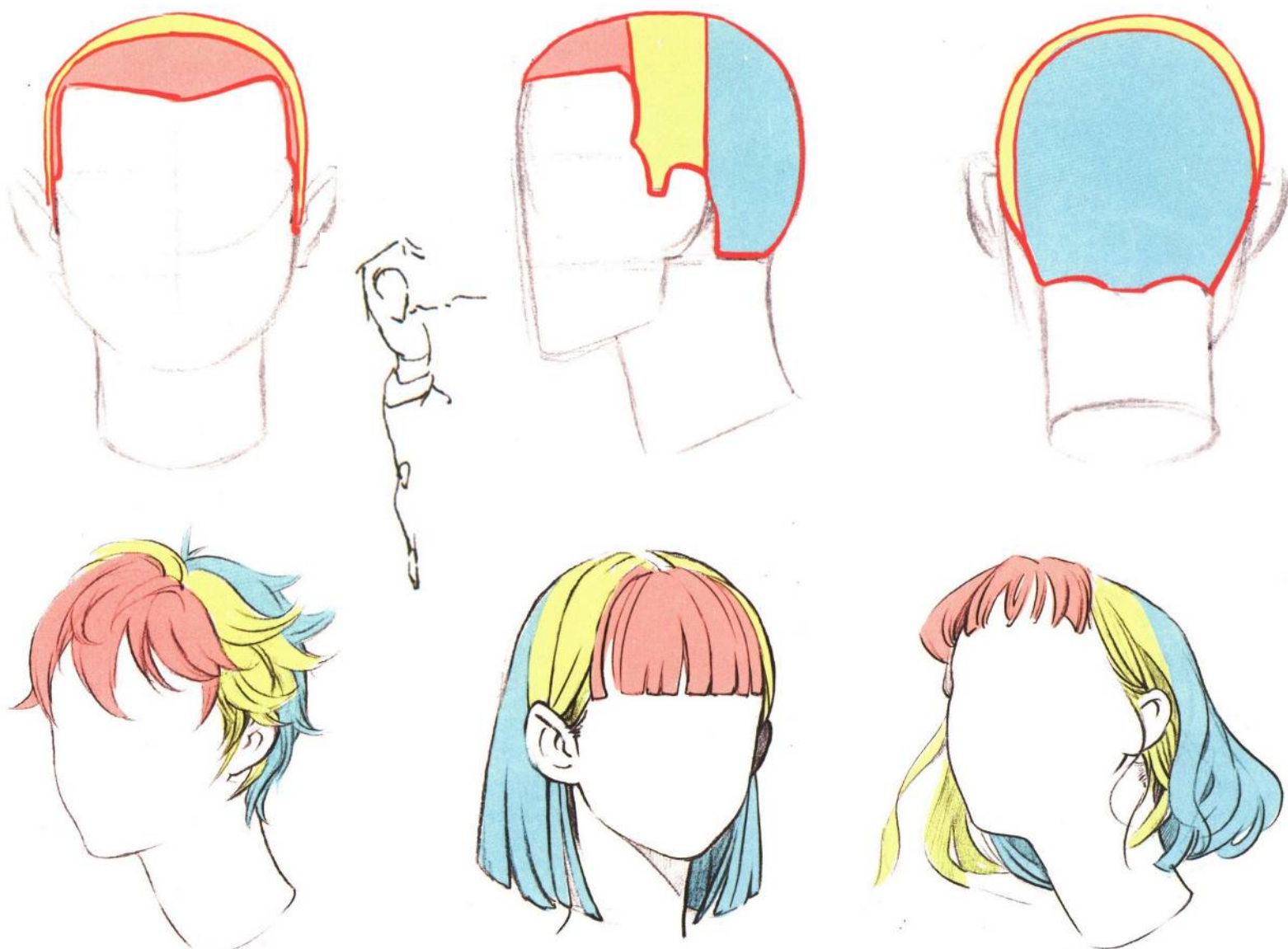
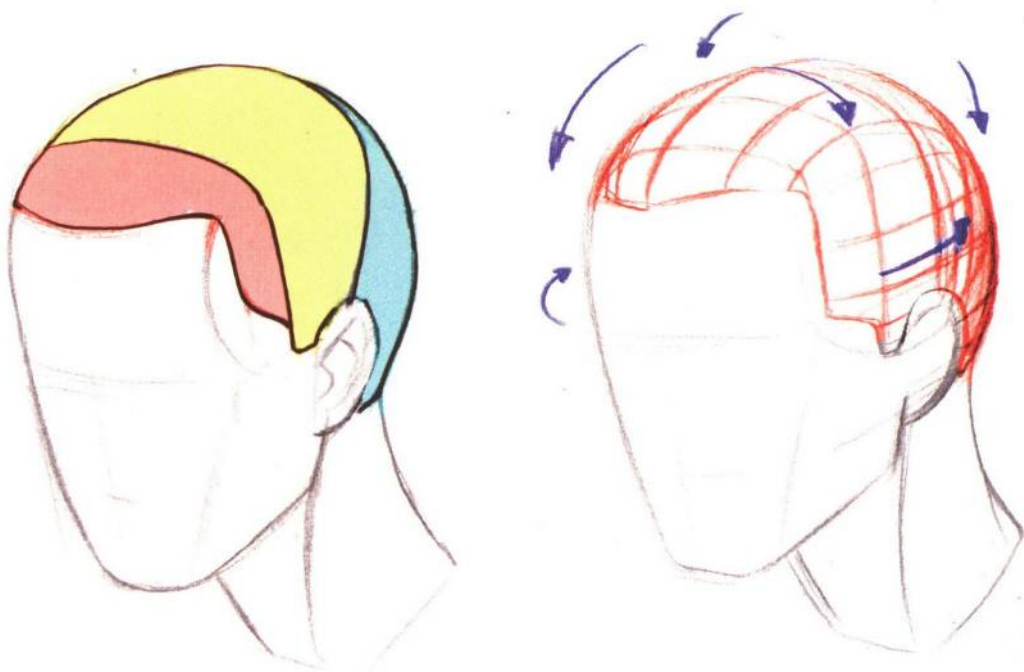
After learning about how to shape the five senses, we can try to combine the bones and muscles to arrange the five senses in the head.



08 Hair sculpting

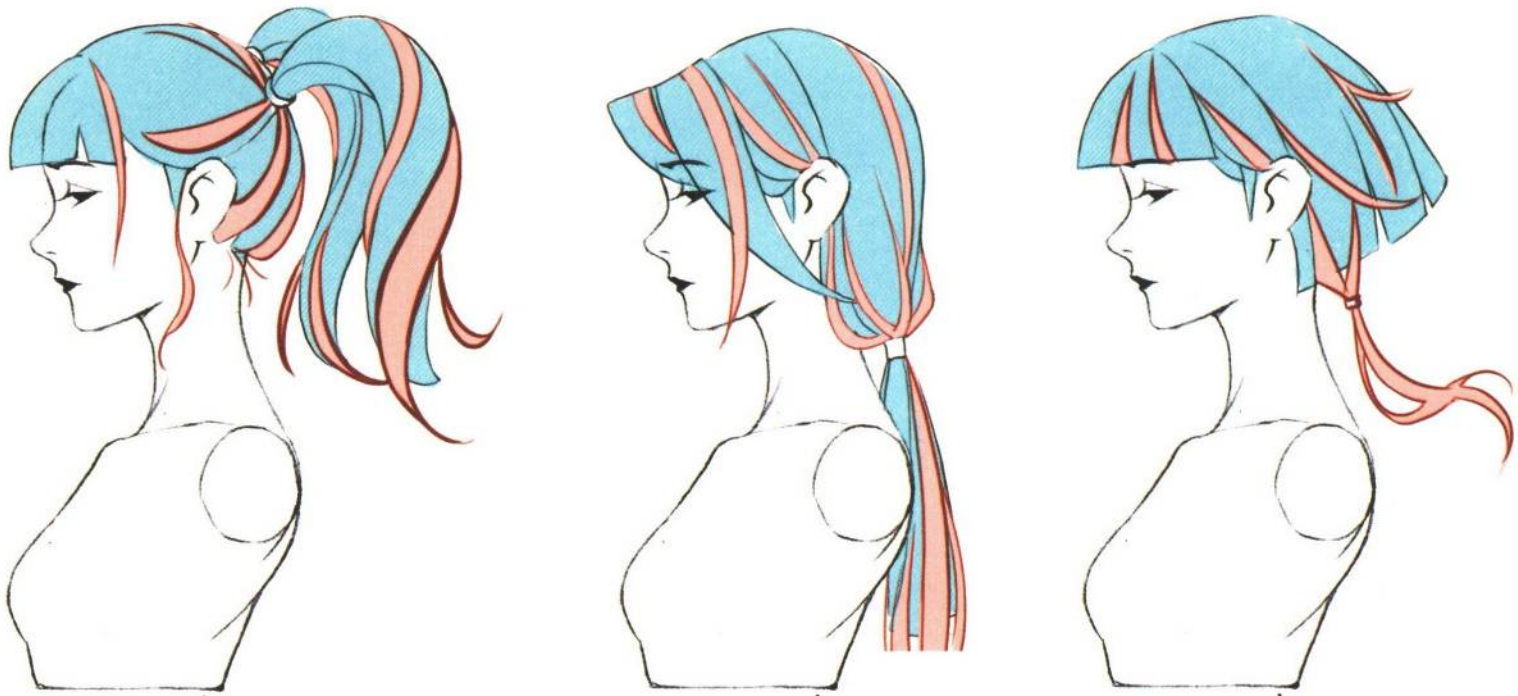
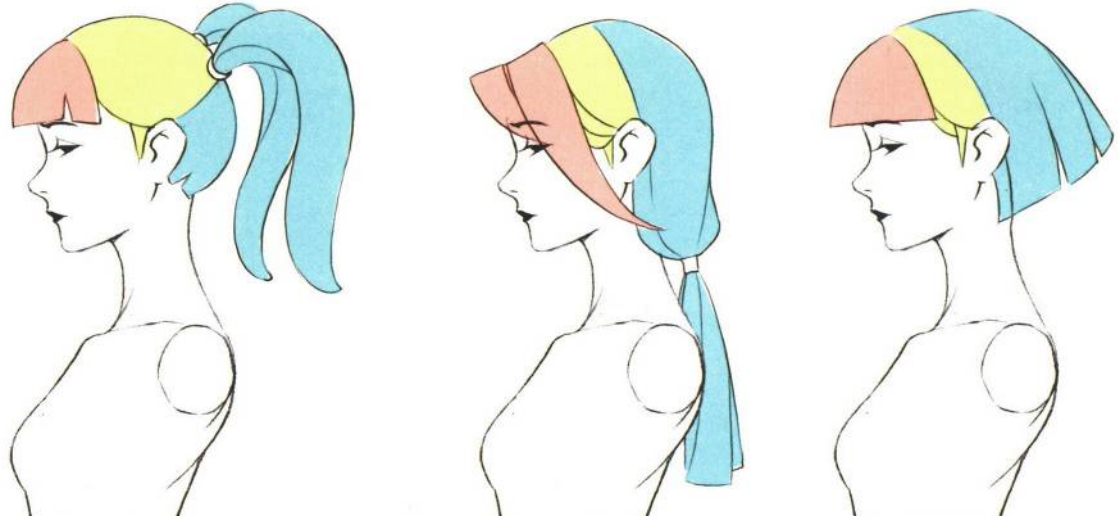
Before shaping the hair, we can divide the hair area into three sections: front, middle and back. When shaping the hair, we should pay attention to the undulation of the hair so that it resembles the latitude and longitude of a globe.

When shaping the hair, we have to analyze the position of the hairline. The ability to create a three-dimensional look for different hair types is due to the knowledge of the turns of the head.

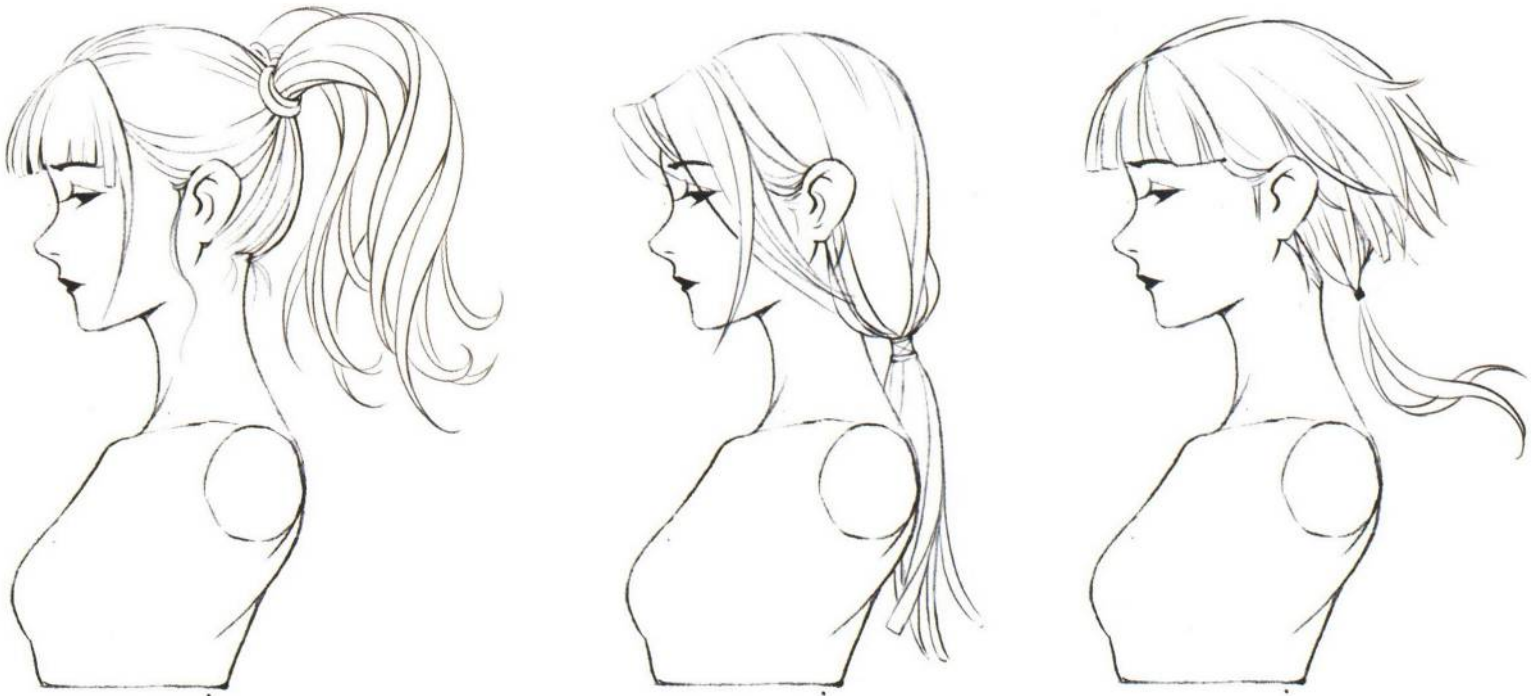


When styling hair, we can combine different styles by trying to change the front, middle and back areas of the hair.

To make the hair more voluminous, we can add small pieces to the hair.

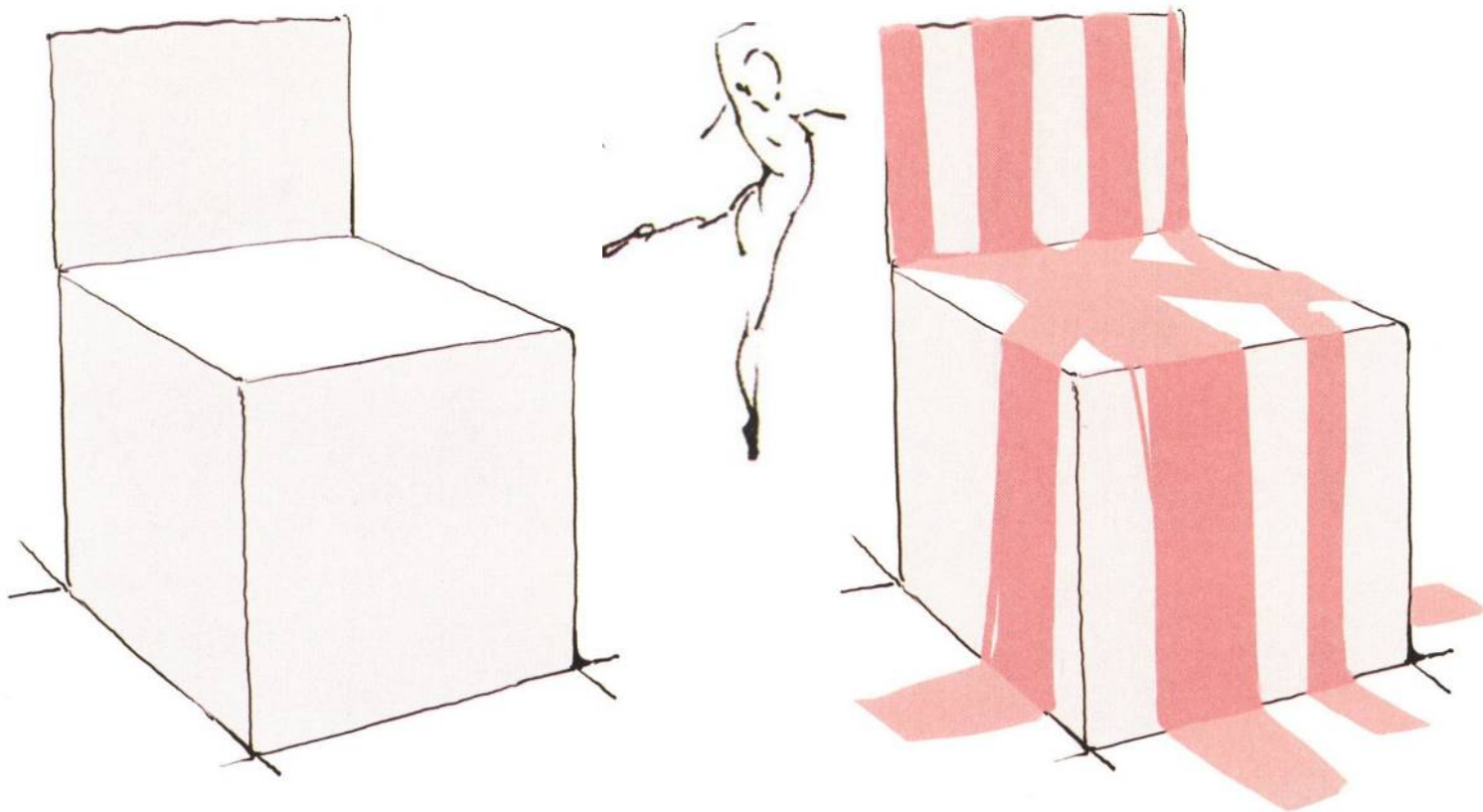


We can add small pieces of hair to the hair to make it more voluminous, and then we can outline the hair, paying attention to the way the hair moves to emphasize the form of the head.



Grouping exercises for hair:

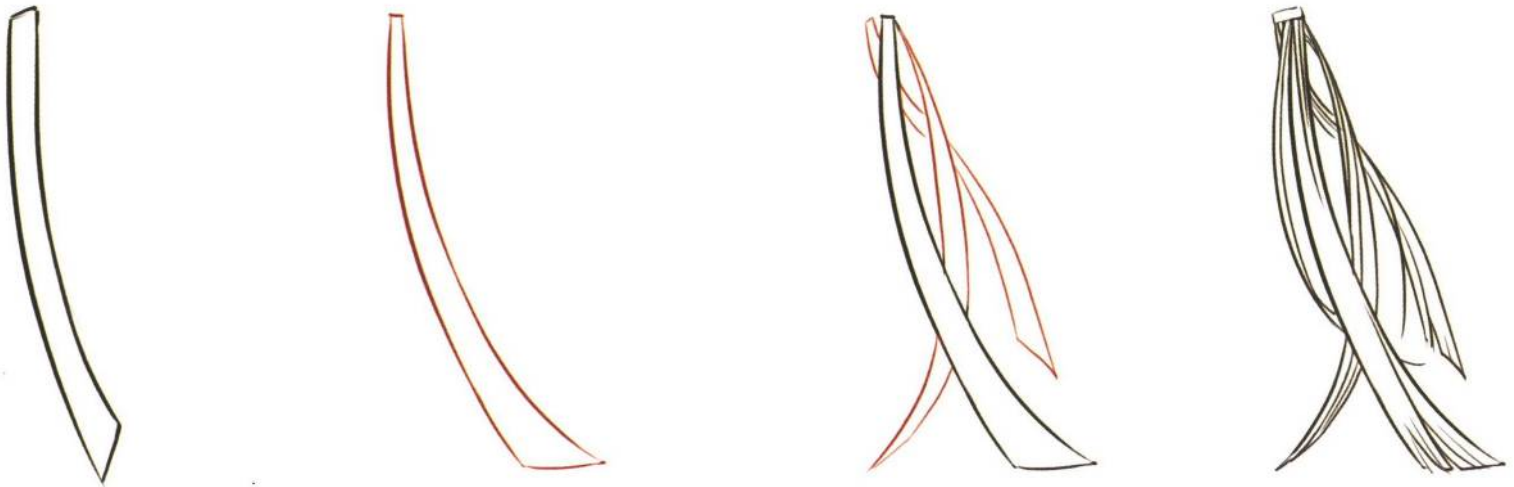
1. Draw the object underneath the hair, and determine the turns of the object.
2. Draw the hair as a piece of "fabric", and make sure that the "fabric" is in contact with the object.



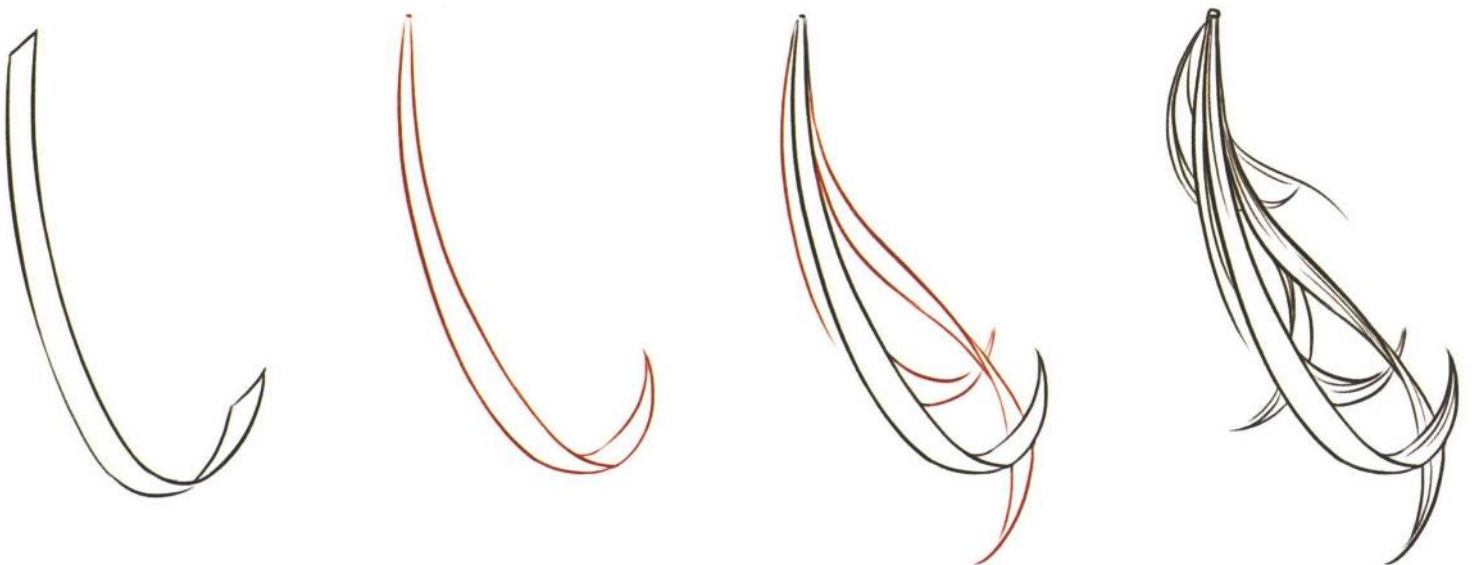
3. Use lines to divide the piece of "fabric", and draw the turns and sparseness of the hair.
4. Shape the shadows on the inside of the hair to emphasize the form of the hair. This exercise will help you clarify the relationship between the hair and the object.



Hair is like a piece of pasta, so when you draw it, you have to pay attention to the perspective state of the pasta, which is big near and small far.



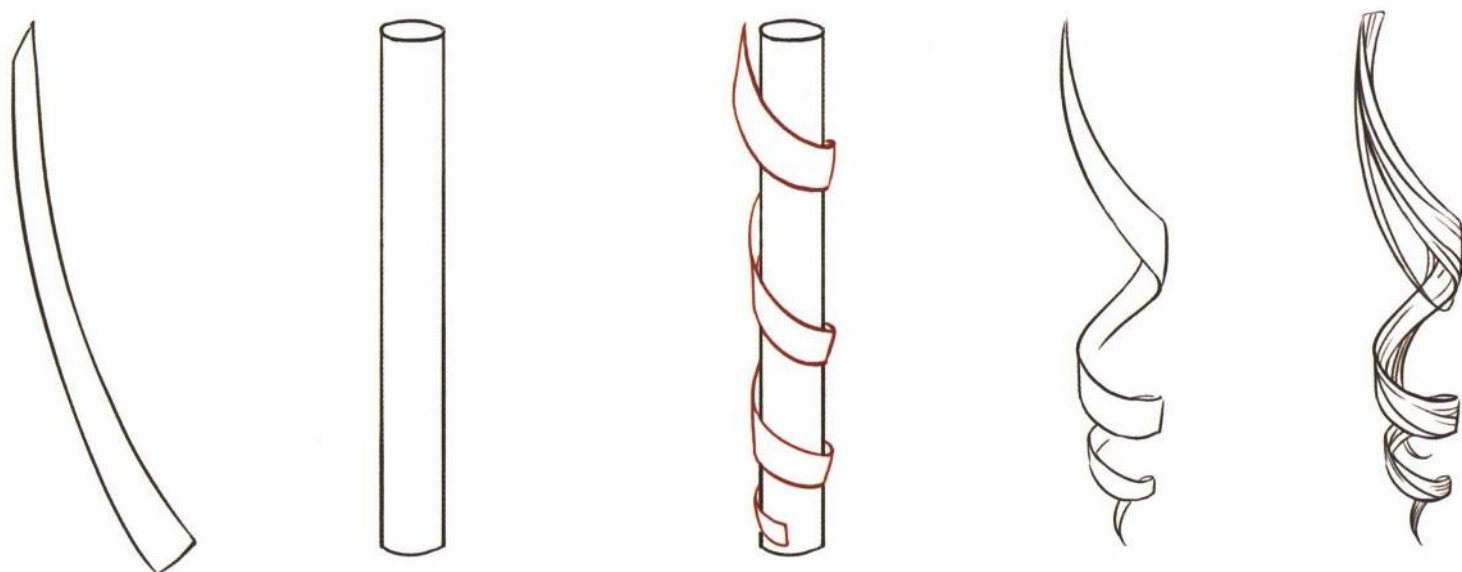
Complex hair is formed by combining several pieces of hair, so it is possible to draw the combination of hair more clearly by arranging the perspective of each piece of hair, dividing the interior, and arranging the lines interspersed in the hair.



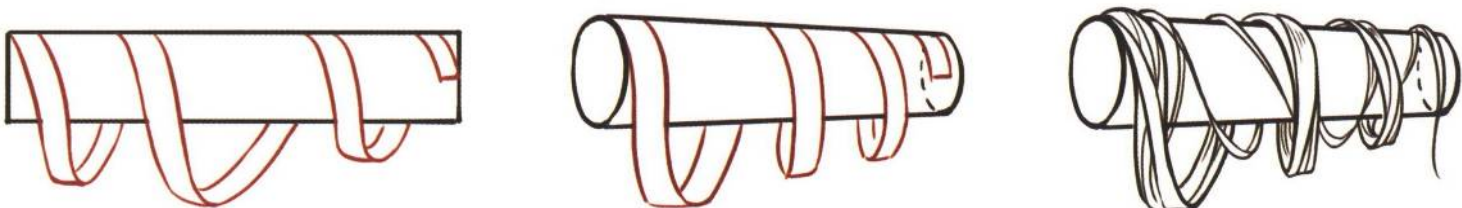
By combining several groups of surfaces with variations, you can create a richer combination of hair. A spiral effect can be created when combining a variety of pieces that have twists and turns in the hair.



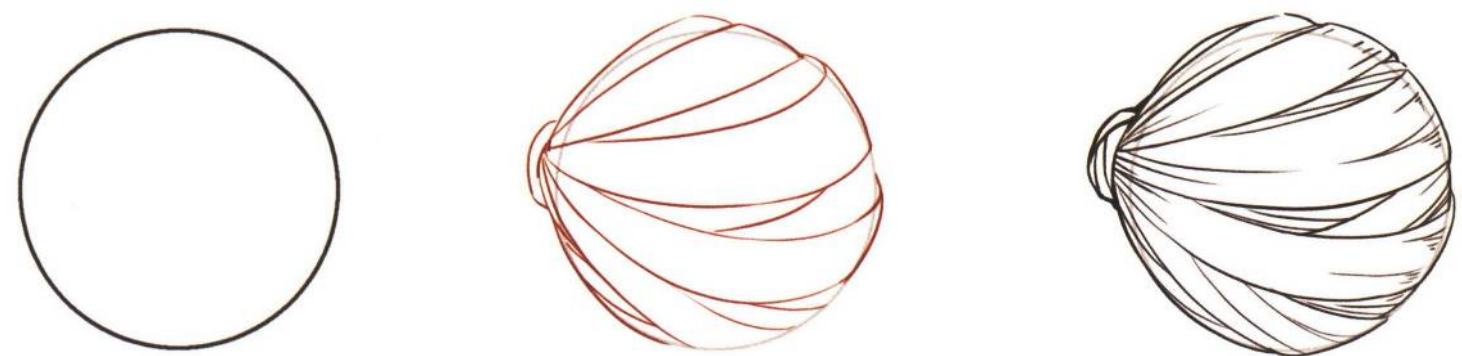
To represent the form of the hair, we can still think of it as a piece of pasta, when it comes into contact with different objects, it will produce different twists and turns.



The sheet will be wrapped around the stick in a spiral shape, and when the stick is withdrawn from the sheet, the shape of the sheet will change due to gravity, in which case the hair will be divided internally and the lines interspersed with local details will be drawn, and a set of spiral curls will be obtained.

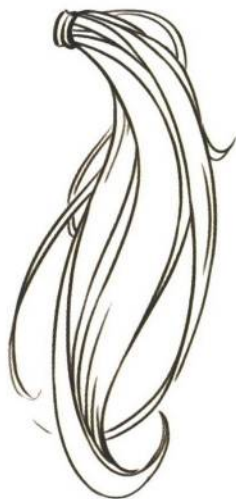


Place the stick wrapped around the hair horizontally, then the hair under the stick will sag due to gravity, express these details, can better set off the texture of the hair.



Coil the hair around the sphere, and the hair will appear to be intertwined.

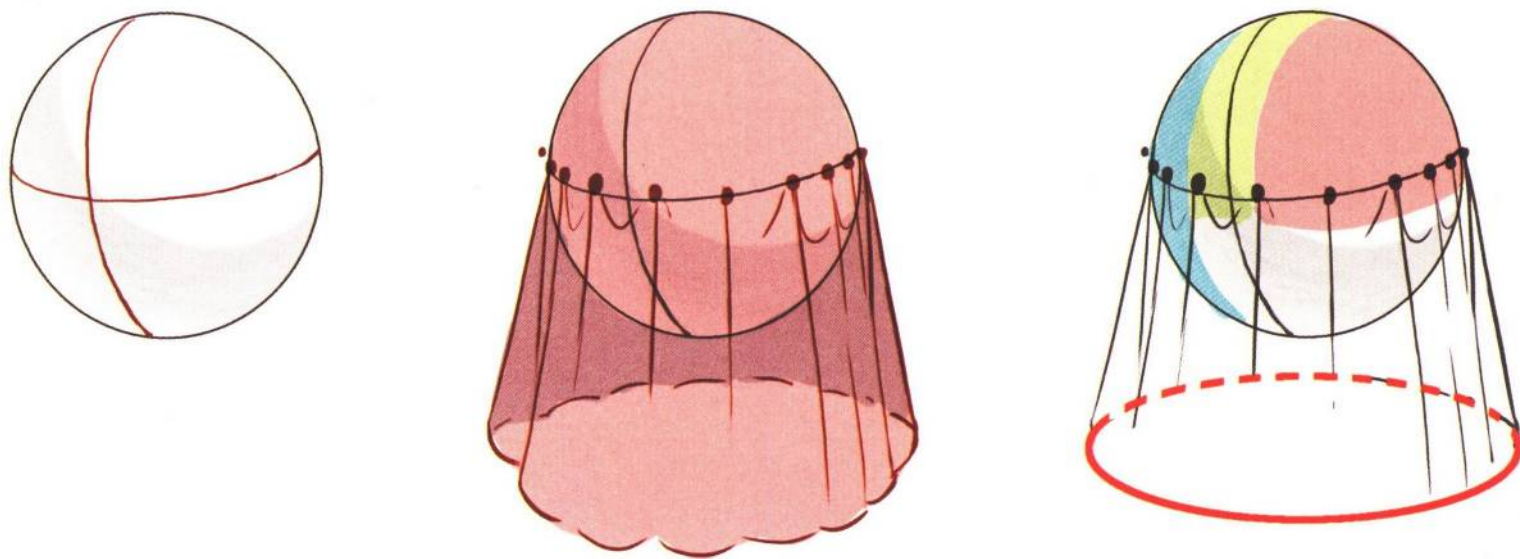
When shaping the hair, we can first clarify the general shape of the hair, on the basis of the general shape of the surface grouping and add the sparse and dense interspersed lines, which can more easily draw the three-dimensional sense of hair.



Hair is shaped from simple shapes step by step, we first simplify the general shape of the hair, and then gradually add small pieces to the combination, the form of each piece in place, so that we can better draw a sense of space hair.



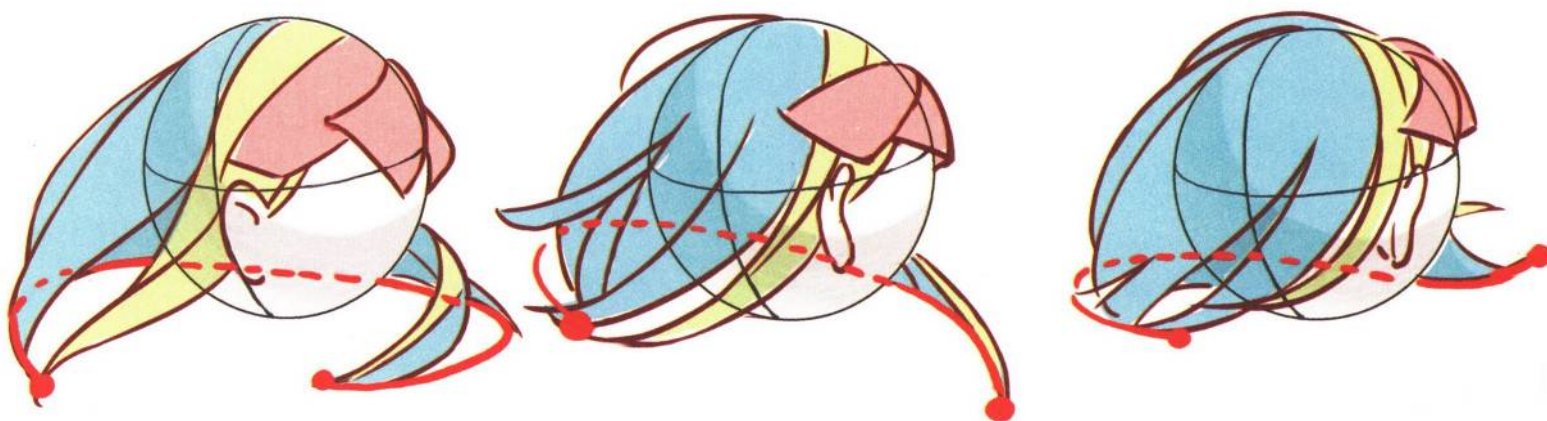
The human head is like a sphere, and the hair is like the gauze that covers the sphere. When we shape the hair, we have to pay attention to the points of contact between the gauze and the sphere, which will vary according to the shape of the sphere, affecting the twisting and grouping of the hair.



By dividing the hair into three zones: front, center and back, we cut the gauze to create a regular hairstyle and then try to create a flowing effect based on it, paying attention to the ringlets of hair.

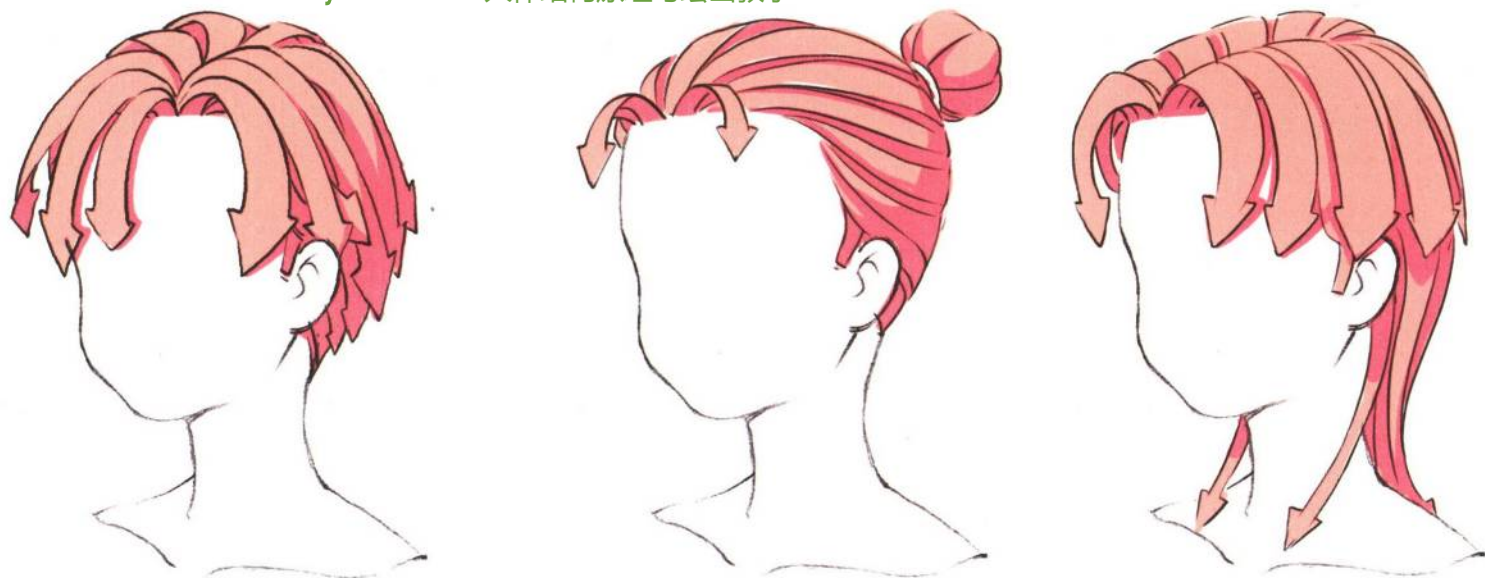


When the head is rotating, we can't look at each hair individually, but we have to look at the ring structure as a whole and understand how it changes when the head is rotating, so that the drawn hair doesn't look trivial.



When the hair is flowing, we can show the different stresses on the front, middle and back areas. Note that different hairstyles present different conditions when flowing.

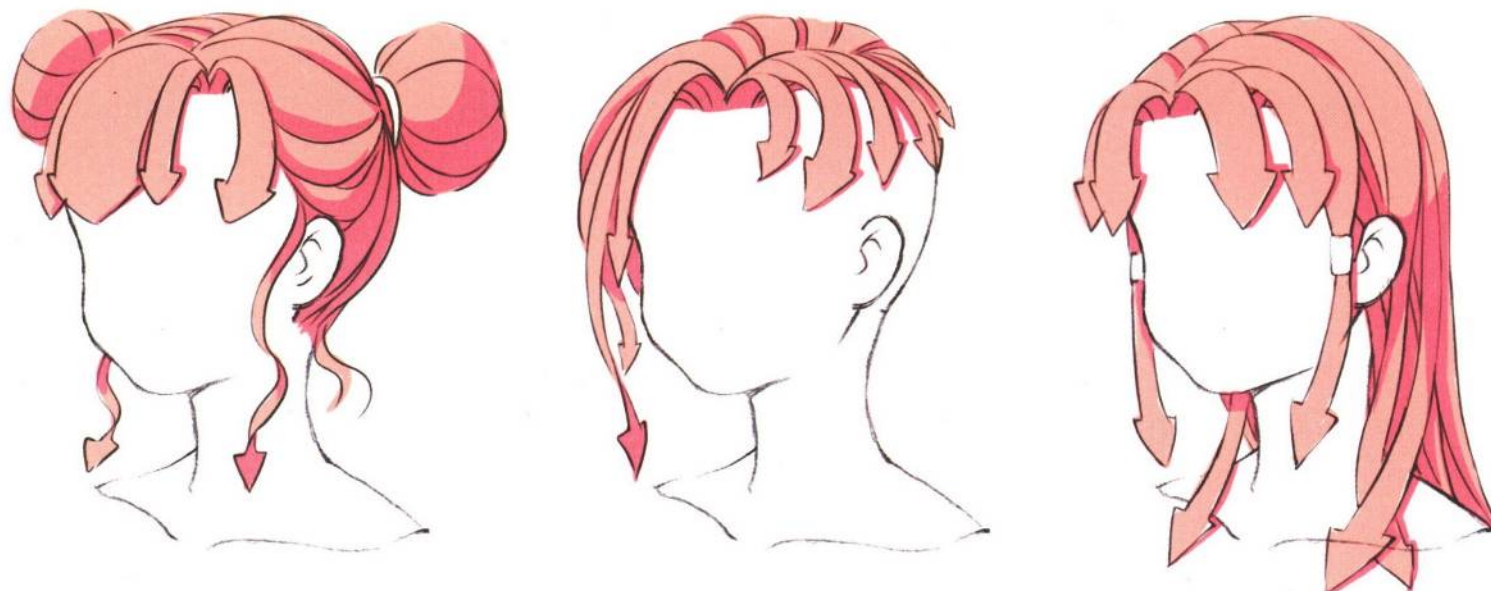




When drawing different hairstyles, we can still see the hair as a strip of noodles, clearly distinguish the direction of the noodles in different areas, and at the same time grasp the density of these noodles and the size of the changes in the combination of a variety of interesting hairstyles.

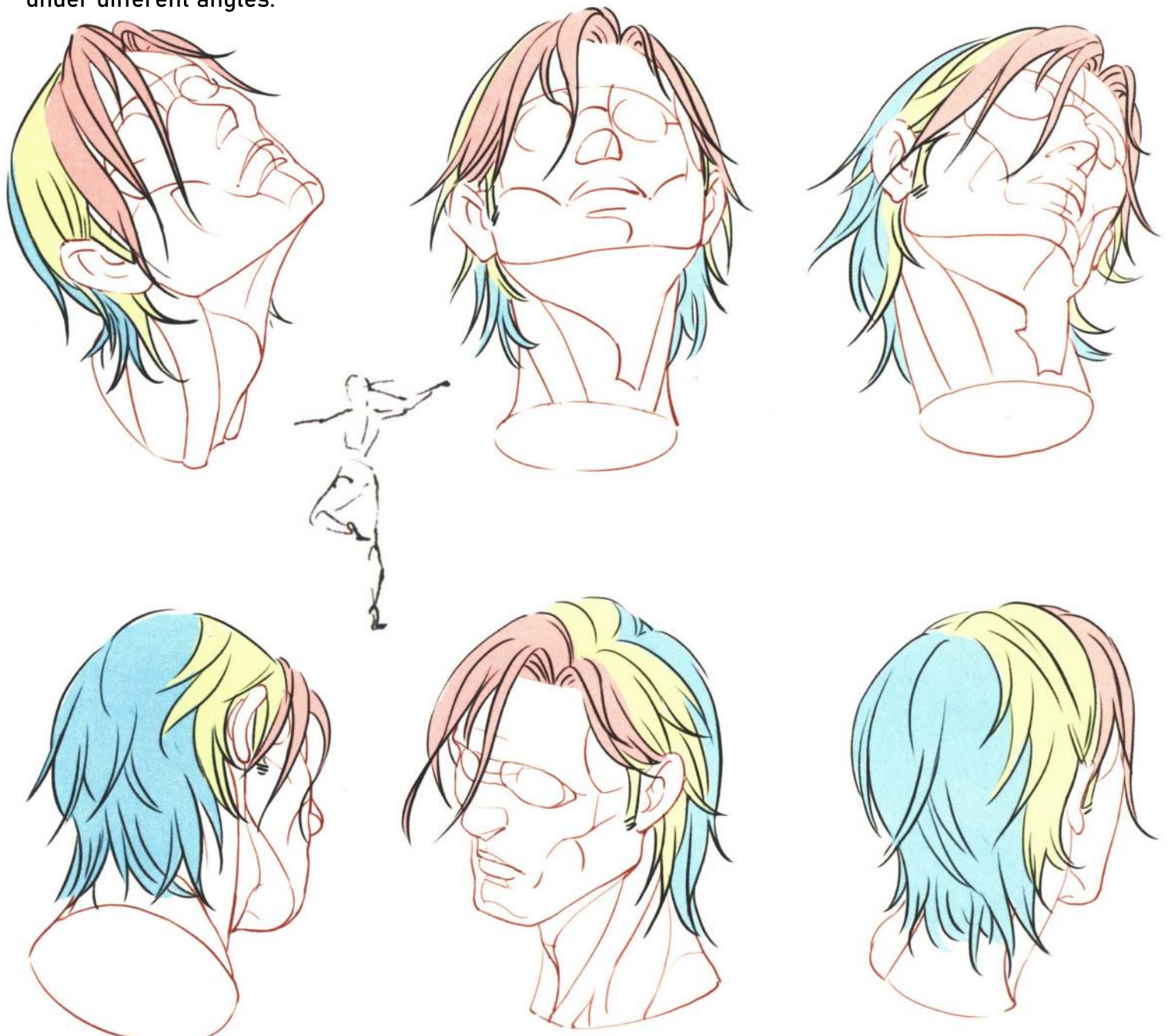


When we practice drawing hairstyles, we should try to find as many hairstyles as possible for reference, rather than rushing to draw silently.





When drawing the same hairstyle under different angles, we should remember several sets of key lines in the front, middle and back areas, and use the unity of these lines to draw the same hairstyle under different angles.





Once you are familiar with the three-dimensional relationship of the head, you can shape your hair to follow the shape of the head. The same hairstyle will look different from different angles.

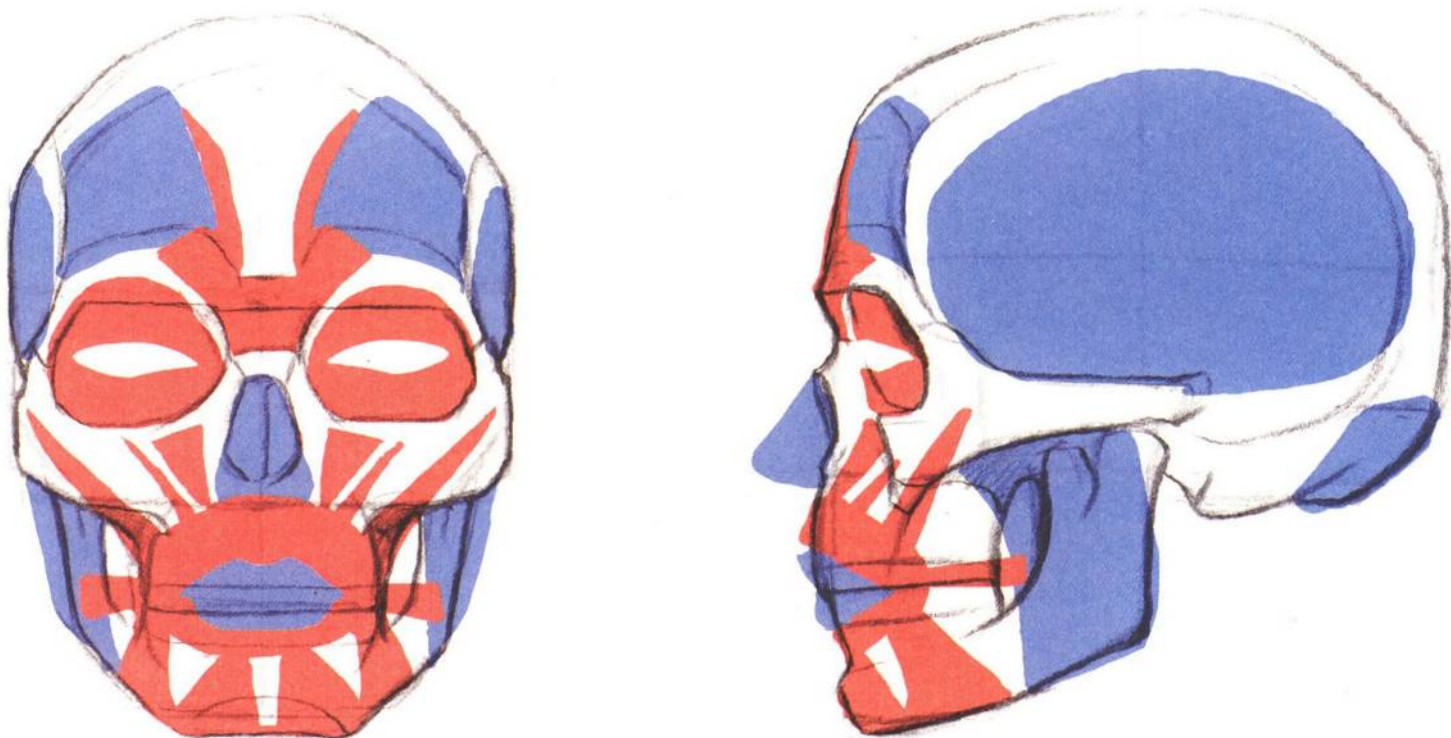


If we want to draw a more realistic hairstyle, we can refer to the photo to practice, and try to follow the hair line when arranging the tone.

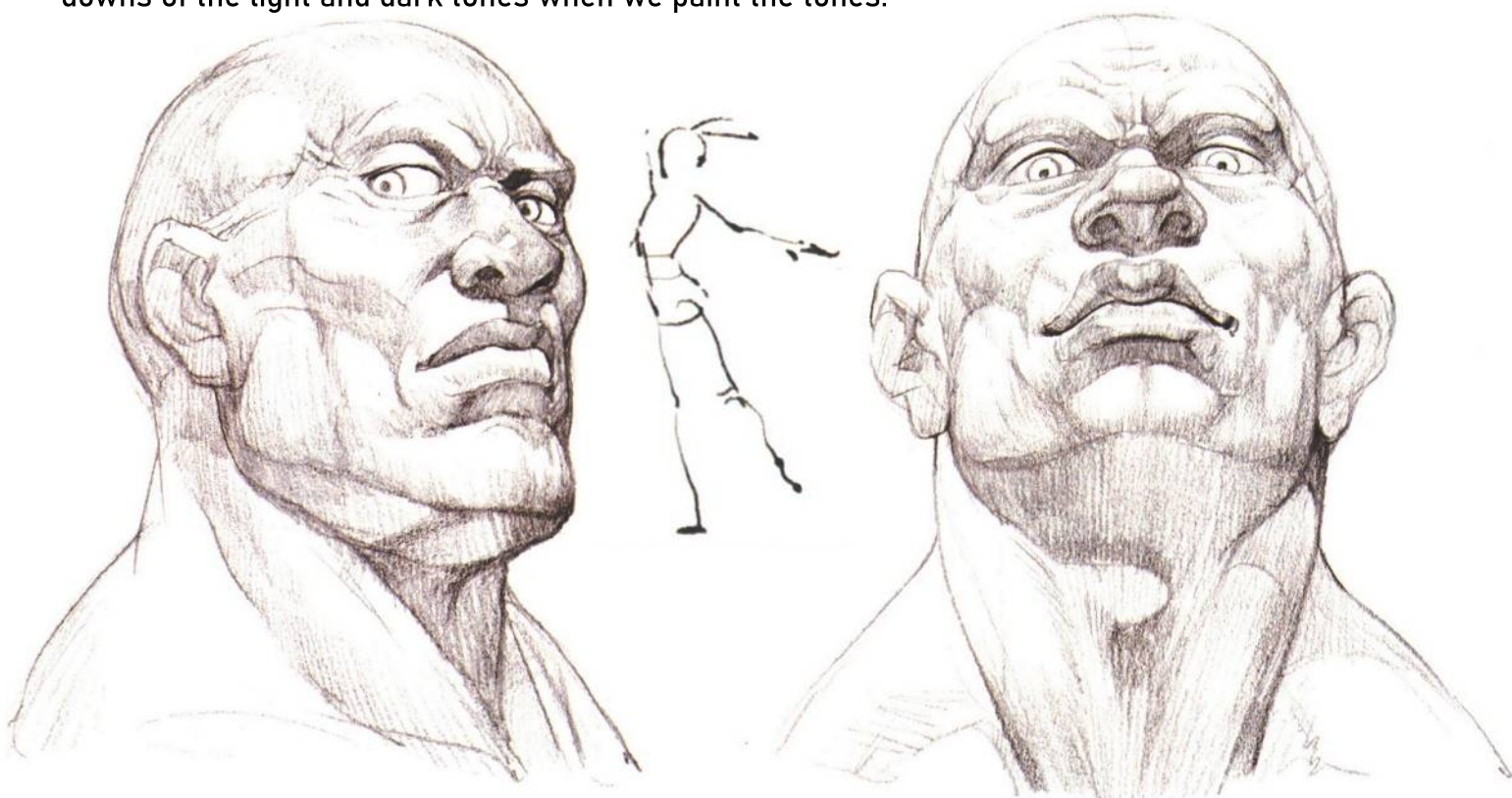


09 Facial muscles and expressions

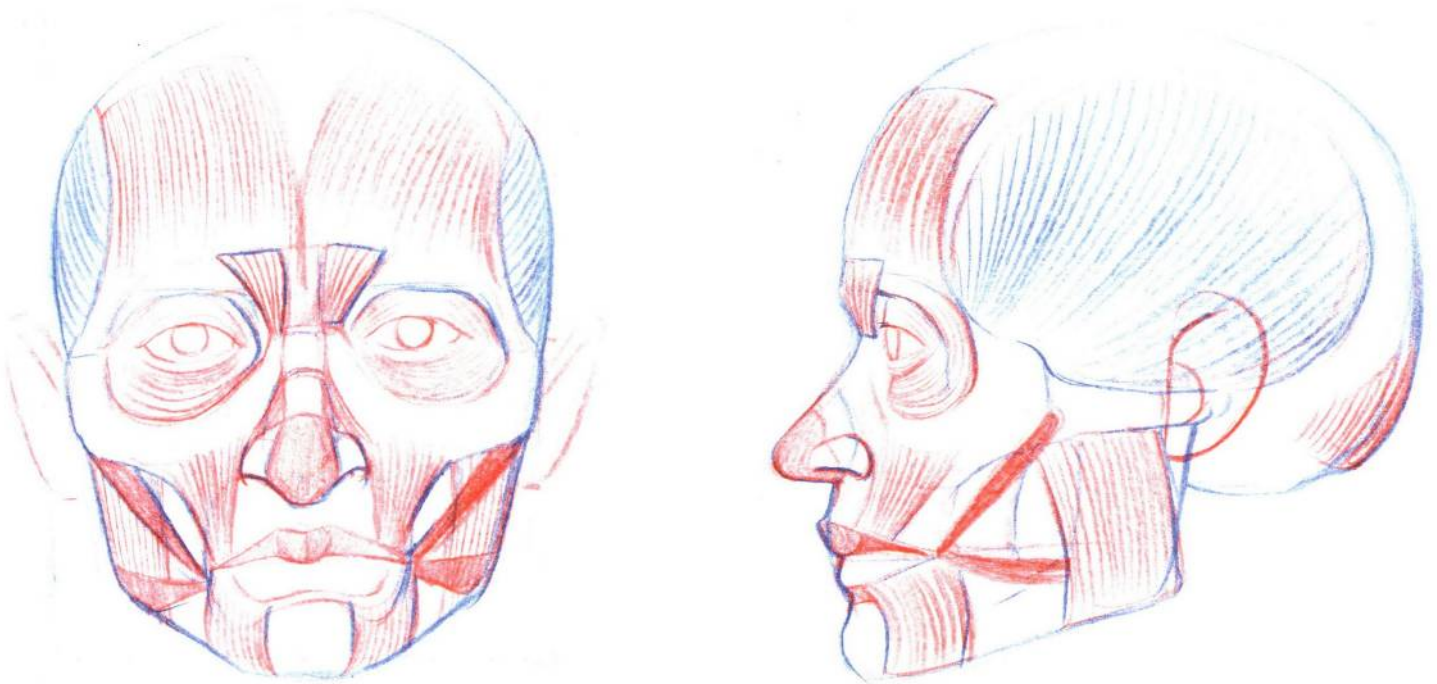
The muscles of the face are relatively complex, so in order to memorize them quickly, we can divide them into two zones: the dynamic zone and the static zone. The muscles in the dynamic area are mainly concentrated around the eyebrows, orbits and orbicularis oris muscles, and the movement of these muscles can easily make people feel the change of expression of the character. The muscles in the static area also move in response to some actions, but the amplitude is not very large and has little effect on the character's expression.



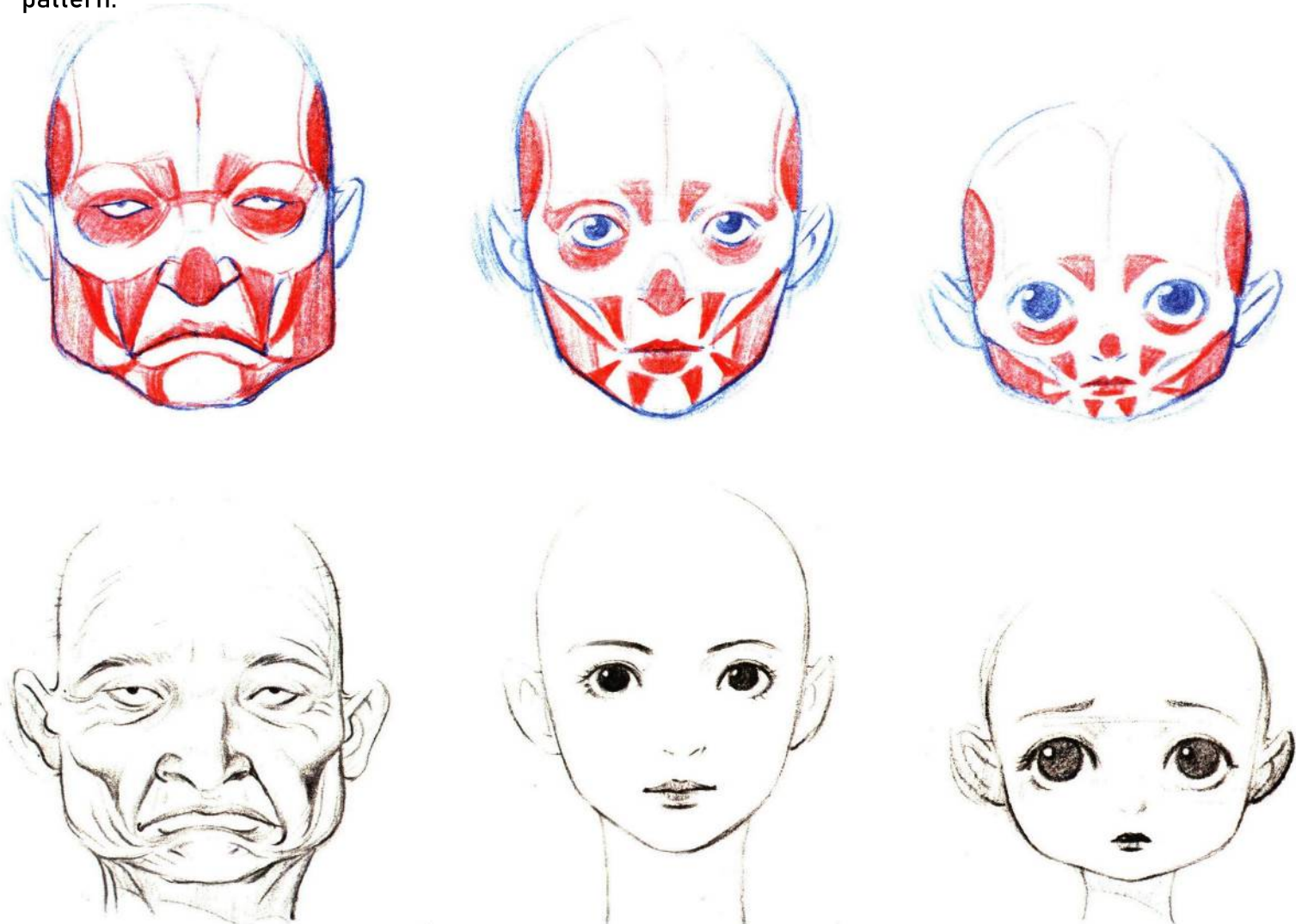
Once we have a certain understanding of the facial muscles, we can better express the ups and downs of the light and dark tones when we paint the tones.



Characters of the facial support and proportionality is not static, we need to learn to use the proportion of the facial support changes in the molding of the facial muscles in the arrangement of the size of their area.

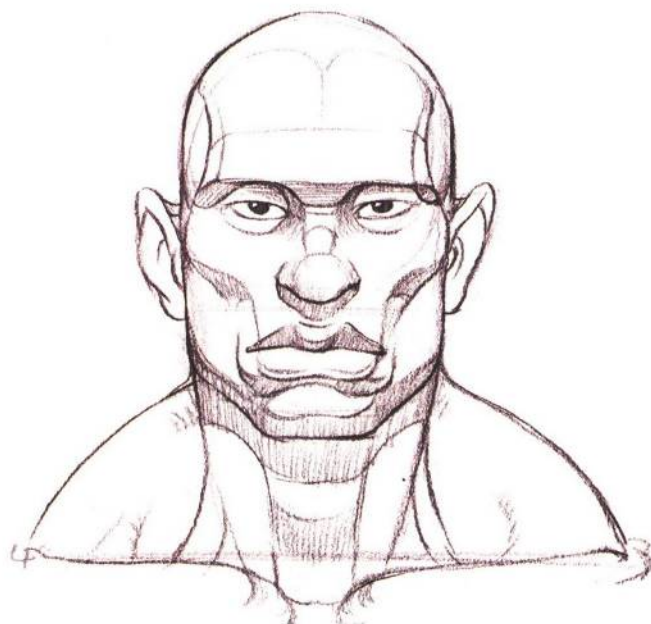
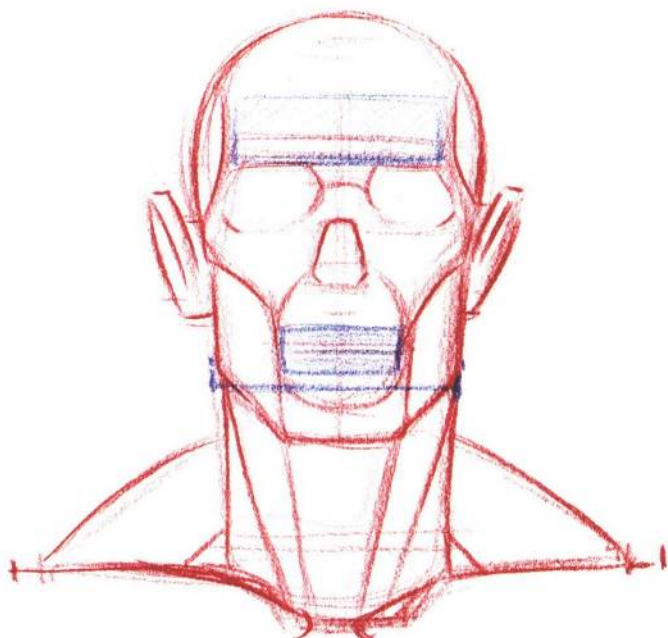


Understanding the character of the facial muscles of the regional division, we also need to understand the facial muscles in different age groups, different sex characters on the distribution pattern.

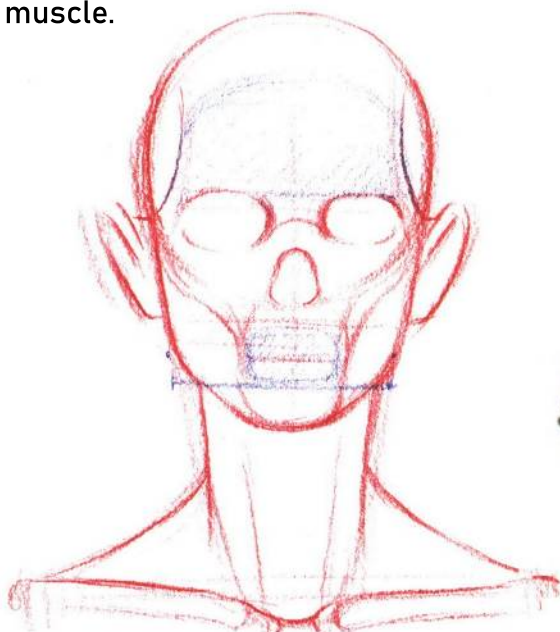




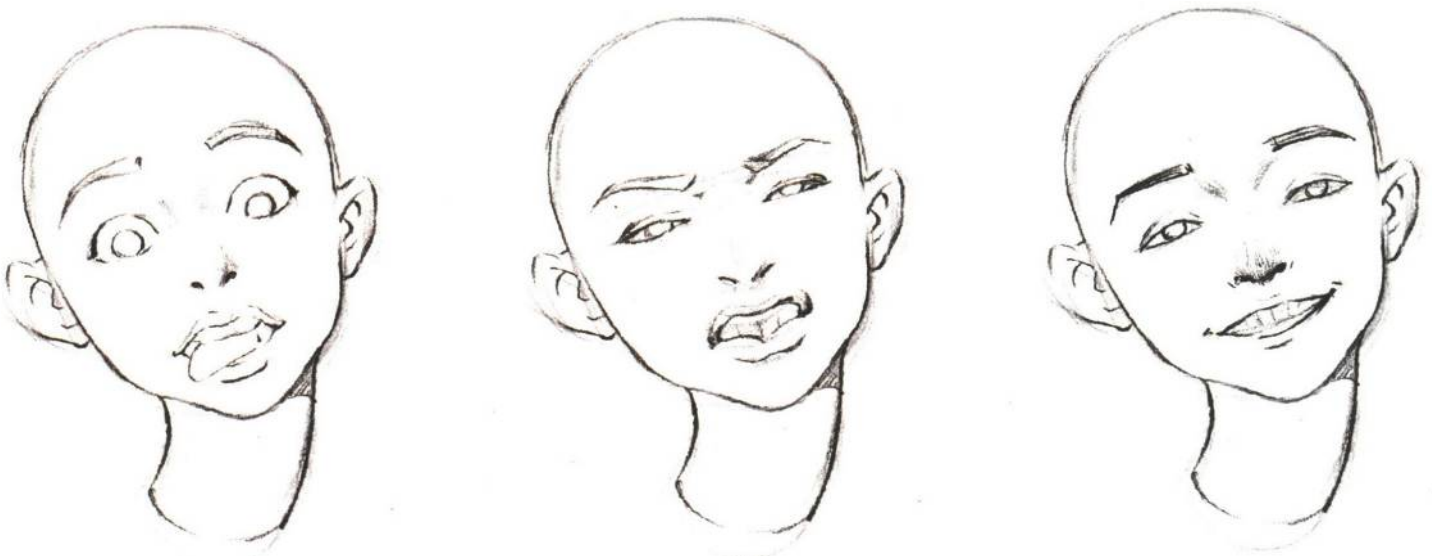
The difference between male and female facial features is mainly in the forehead, facial angles, and the size of the orbicularis oris muscle.



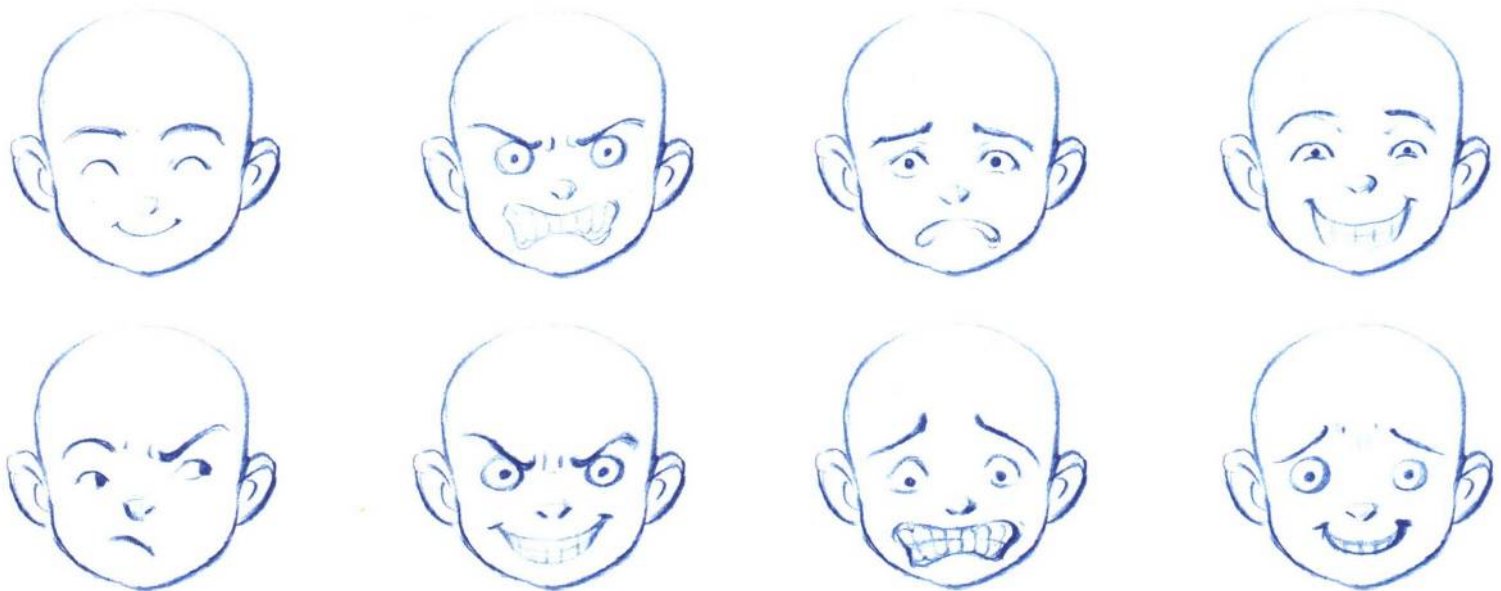
Compared with women, men have a wider forehead, a more angular face, and a larger orbicularis oris muscle.



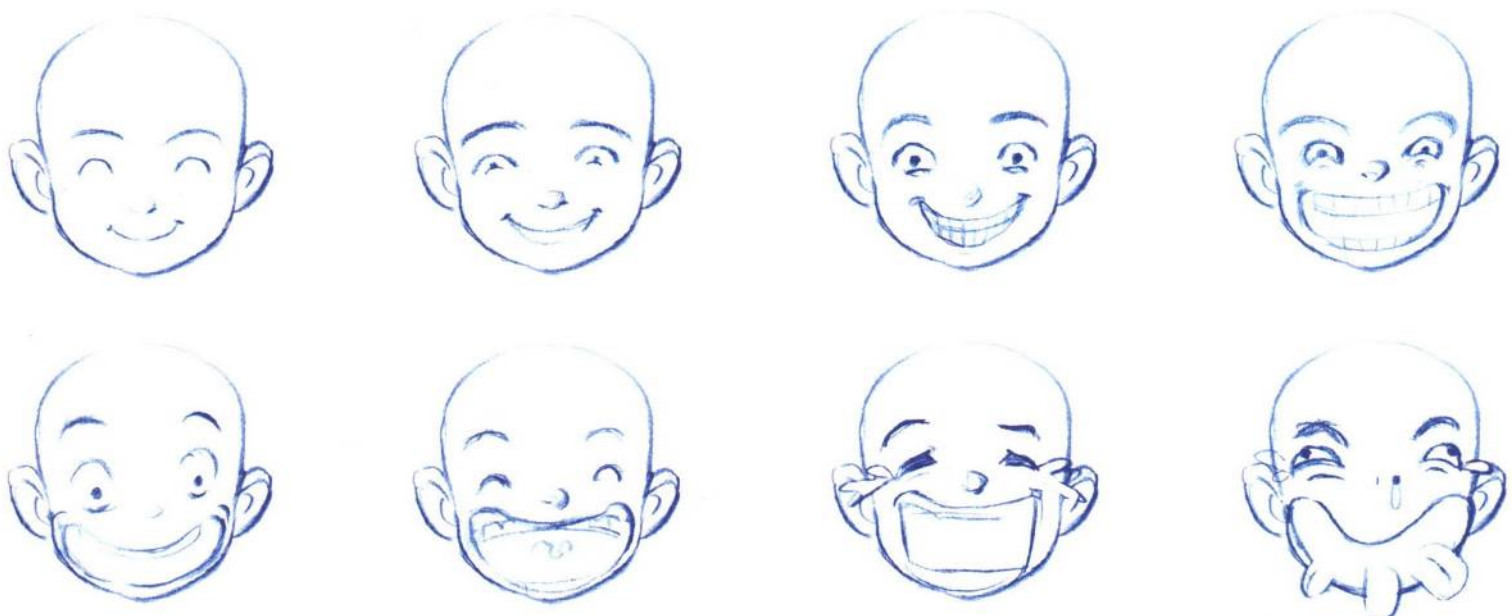
The main purpose of our understanding of facial muscles is to better model different expressions on a character's face.



We can think of the five senses as symbols and try to make different combinations.



If we want to increase the richness of our expressions, we can practice exaggerating an expression step by step, the following shows the effect of exaggerating the expression of "smile" step by step.





If we can't visualize a vivid expression, we can observe the state of the five senses in real life after a person makes an expression.

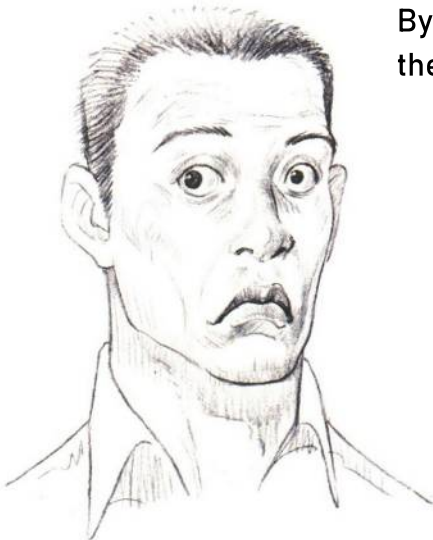


Once we have accumulated a certain amount of observations, we can draw these expressions in our creations.





By slightly adjusting the scale of real expressions, we can apply them to anime characters.

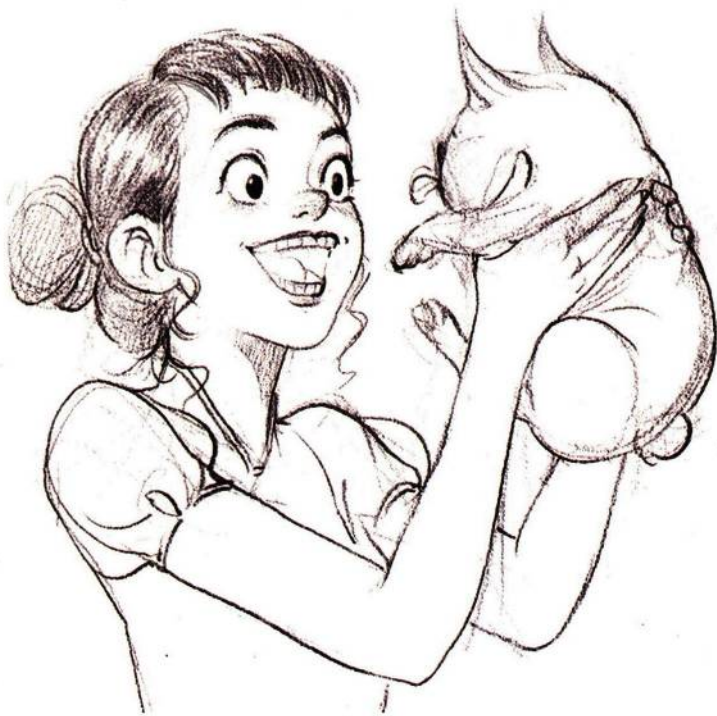


If you want to draw a vivid expression, you can try role-playing.

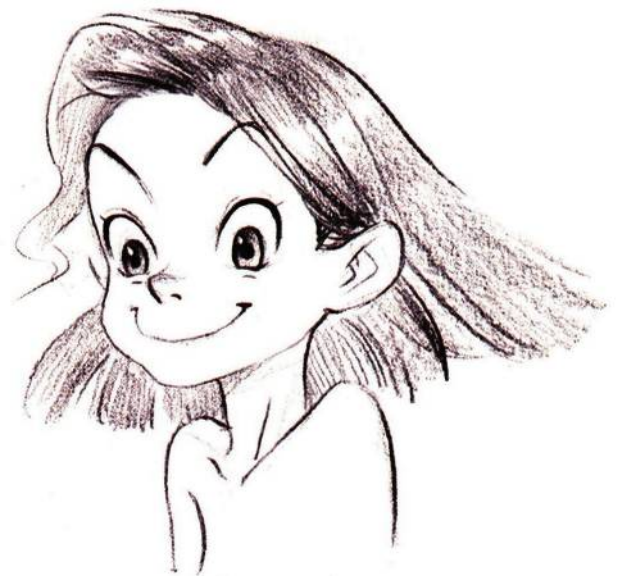


When you want to draw a character's expression, you can try to play the character first, and then draw it later, which is a very effective way to draw a good expression.





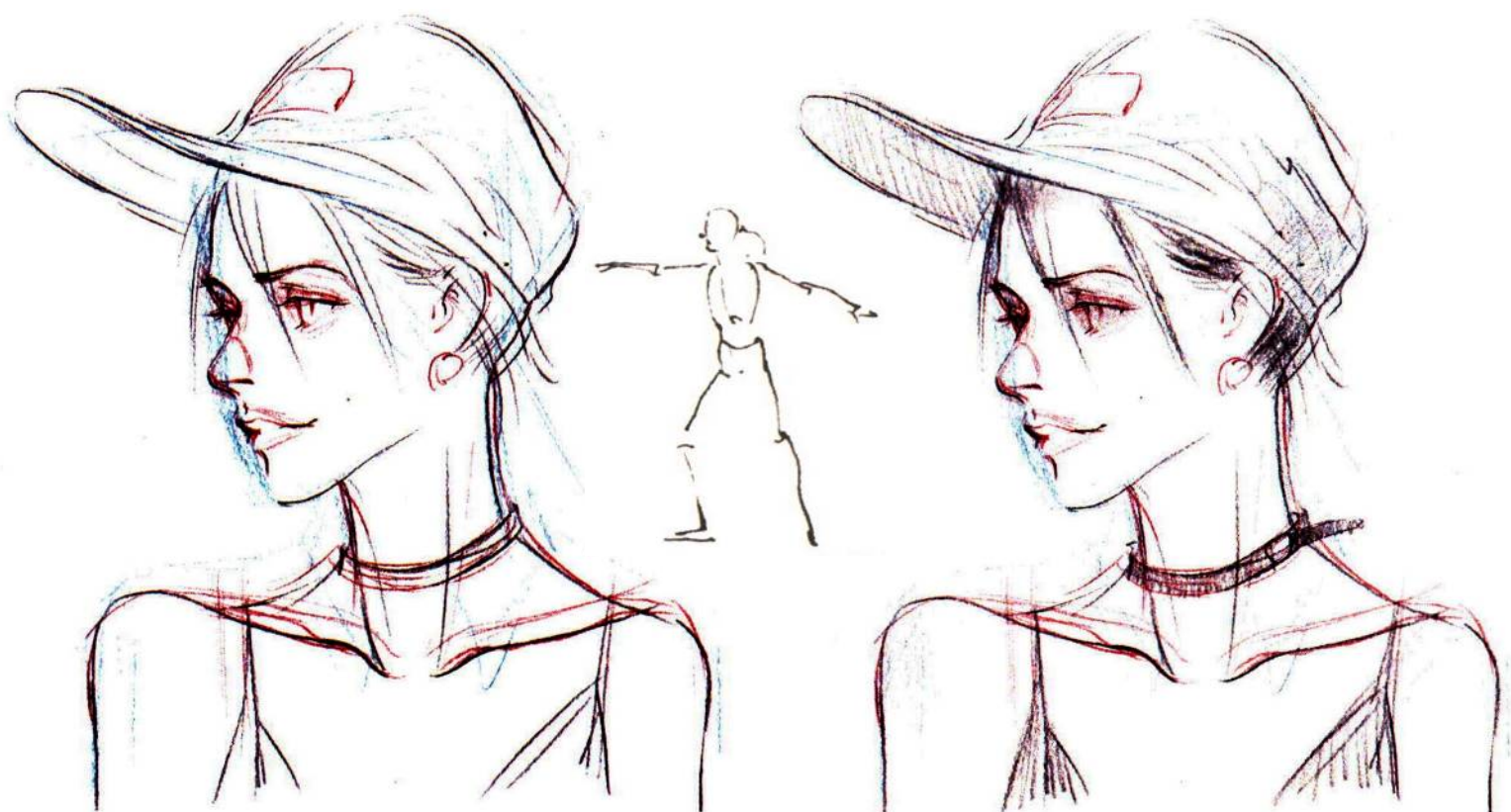
When drawing, we can record some of the more memorable scenes in our daily life, such as drawing the different expressions of different characters when they are in a happy mood.



10 Steps for drawing the head



1. Make a sketch, with red lines marking the key parts of the character (features, collarbone).
2. Outline the sketch with clear straight lines.
3. Add more details to the detail lines.
4. Pencil in the tones.



5. Use tissue paper to create a transition effect for the tone, allowing the paper to better absorb the lead powder.



6. On the basis of the previous step, further refine the tone, so that the tone of the light and dark relationship more prominent.

7. Shape the facial features to make the tone more harmonious.

8. Use small brush strokes to add tones, form a natural transition with the previous tones, make the overall tone softer, and then draw the face and head ornaments.



When we draw a character, we don't need to draw every part of the character completely, but we should make appropriate choices and draw the key parts of the character in detail to make the relationship between the primary and secondary parts more obvious.

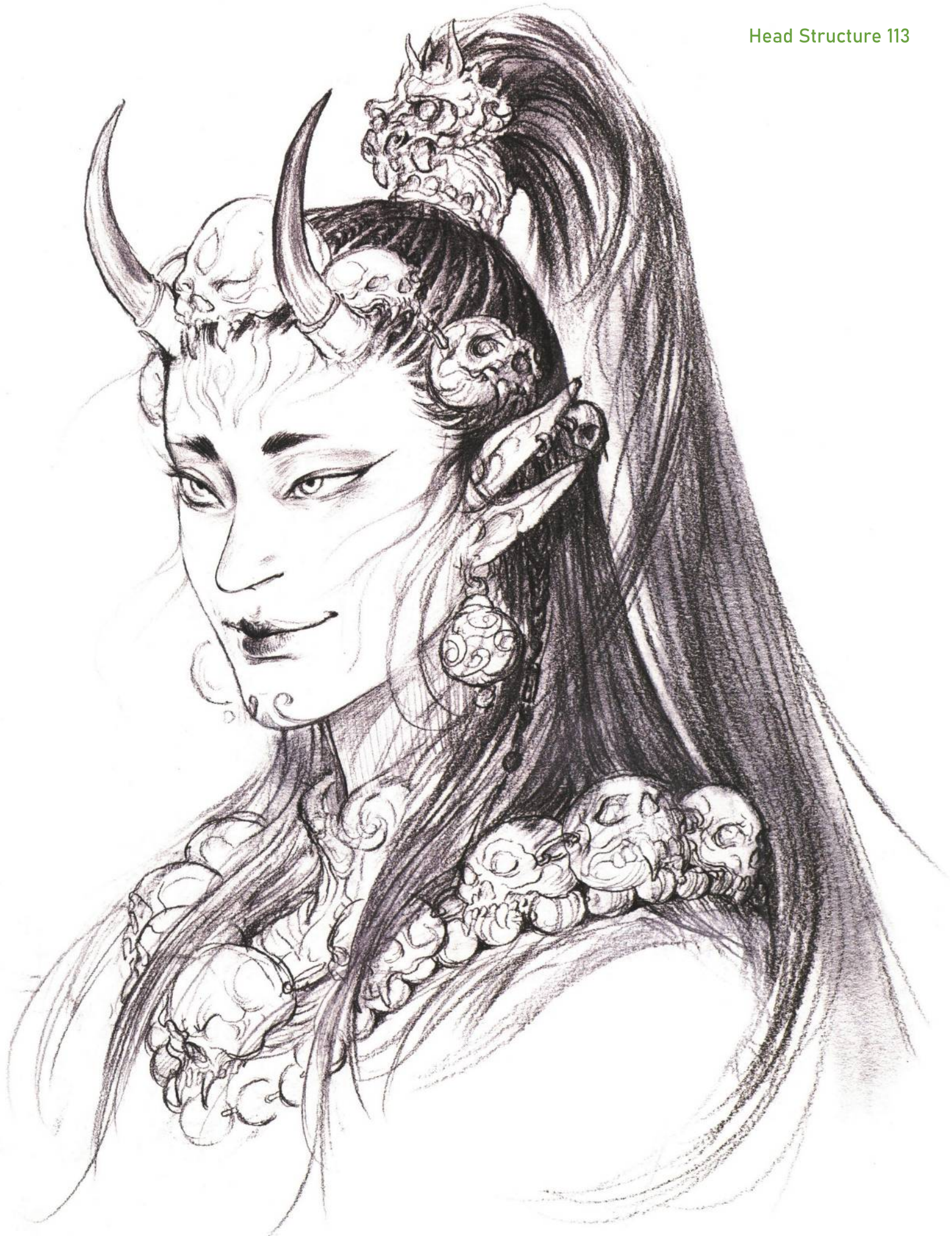


11 Comprehensive exercises for the head

In addition to bones and muscles, the head of a character usually has some decorations. We can observe the head decorations of different characters in our daily life, and we can accumulate different head decorations from photographs, and then arrange them into the character's head through graphic processing.







When we come across a combination of elements that we like very much, we can transform it into a realistic head ornament and draw it, and then slowly carve out the details.







Chapter Three



Torso Structure

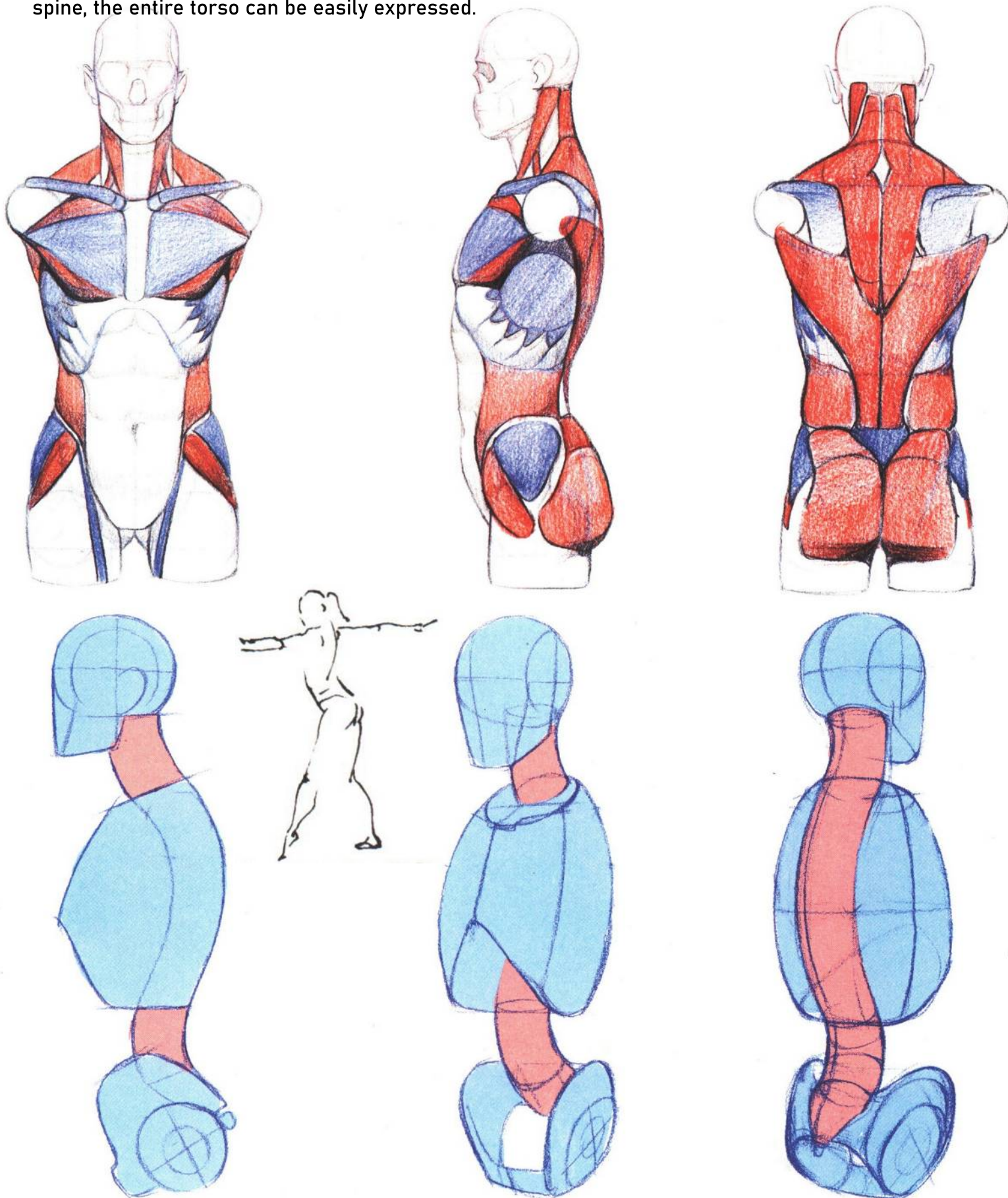
躯干结构

第三章

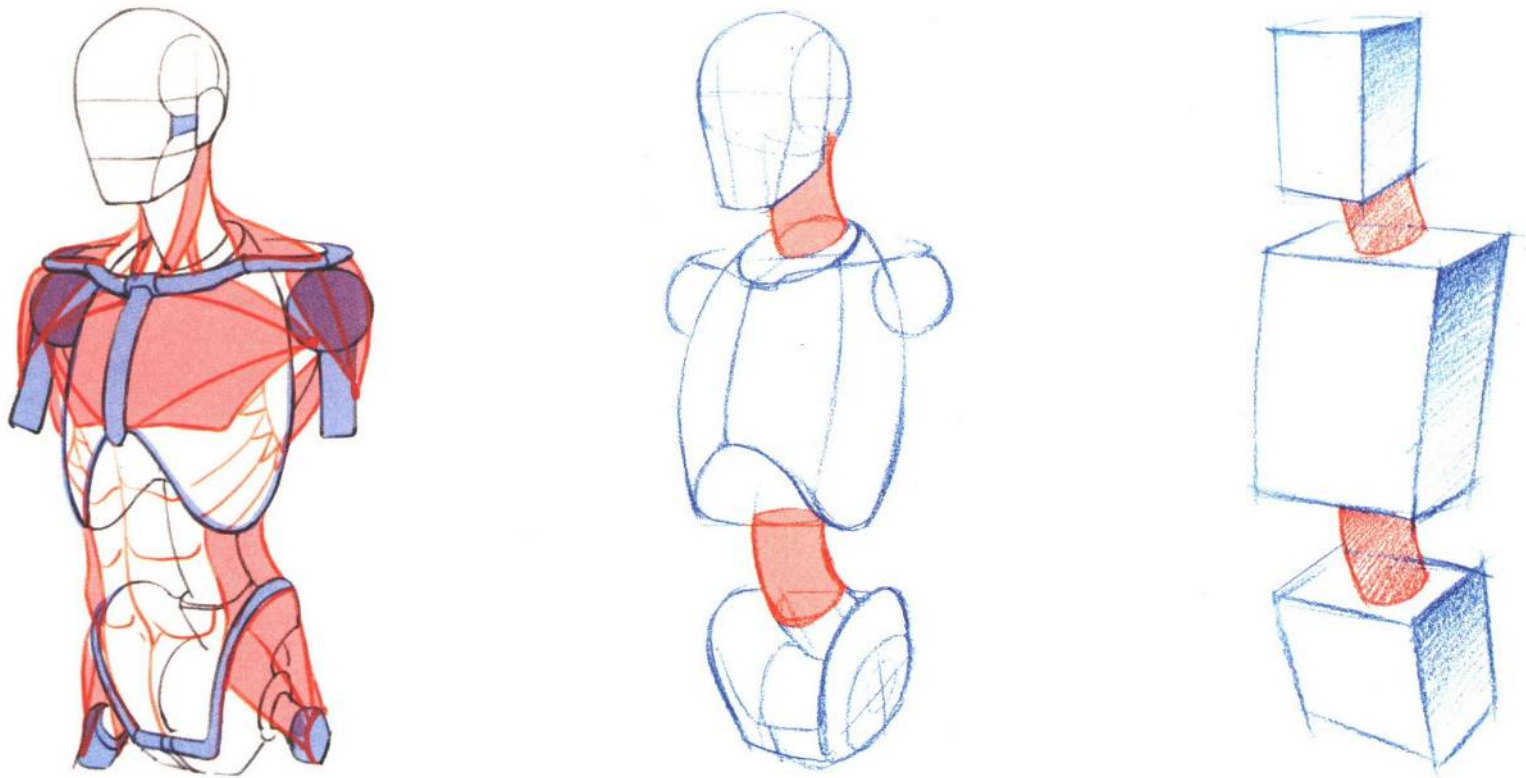
- 01 躯干结构拆解
- 02 脖子的结构
- 03 腰部的结构
- 04 胸腔的结构
- 05 胯部的结构
- 06 偏胖的人和偏瘦的人的躯干对比
- 07 躯干的绘制步骤
- 08 躯干的变通和运用的绘制步骤

01 Torso structure breakdown

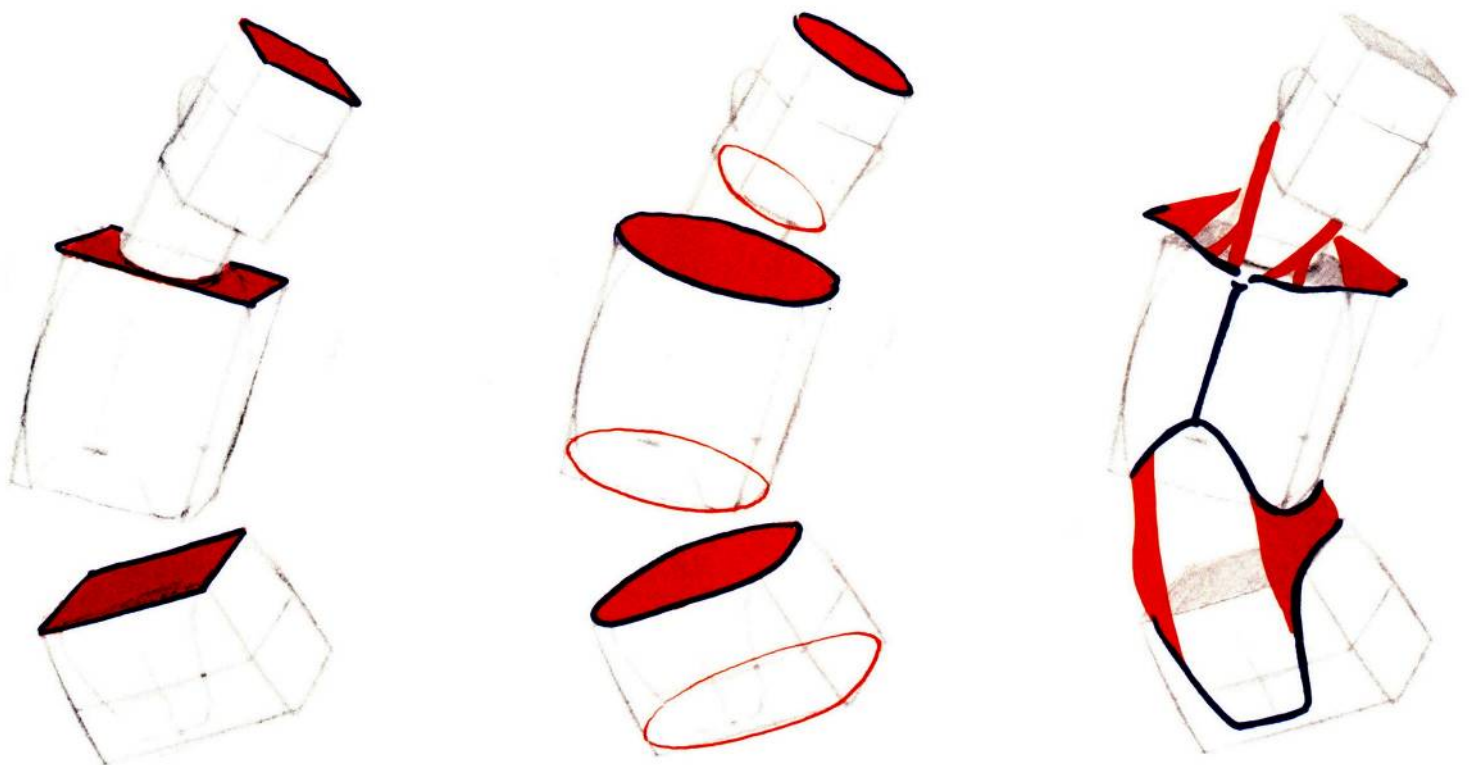
The human torso has a lot of muscle distribution, and we can see in the three views below that the muscle interspersed relationship is more complex. In the process of drawing the torso, we should pay attention to the spine, which is a very important structure, and master the movement of the spine, the entire torso can be easily expressed.



The torso is a complex structure, so we need to simplify it when we draw it. The first step to understand the structure of the torso is to simplify the skeleton and muscles, which are simply a combination of bones and muscles.

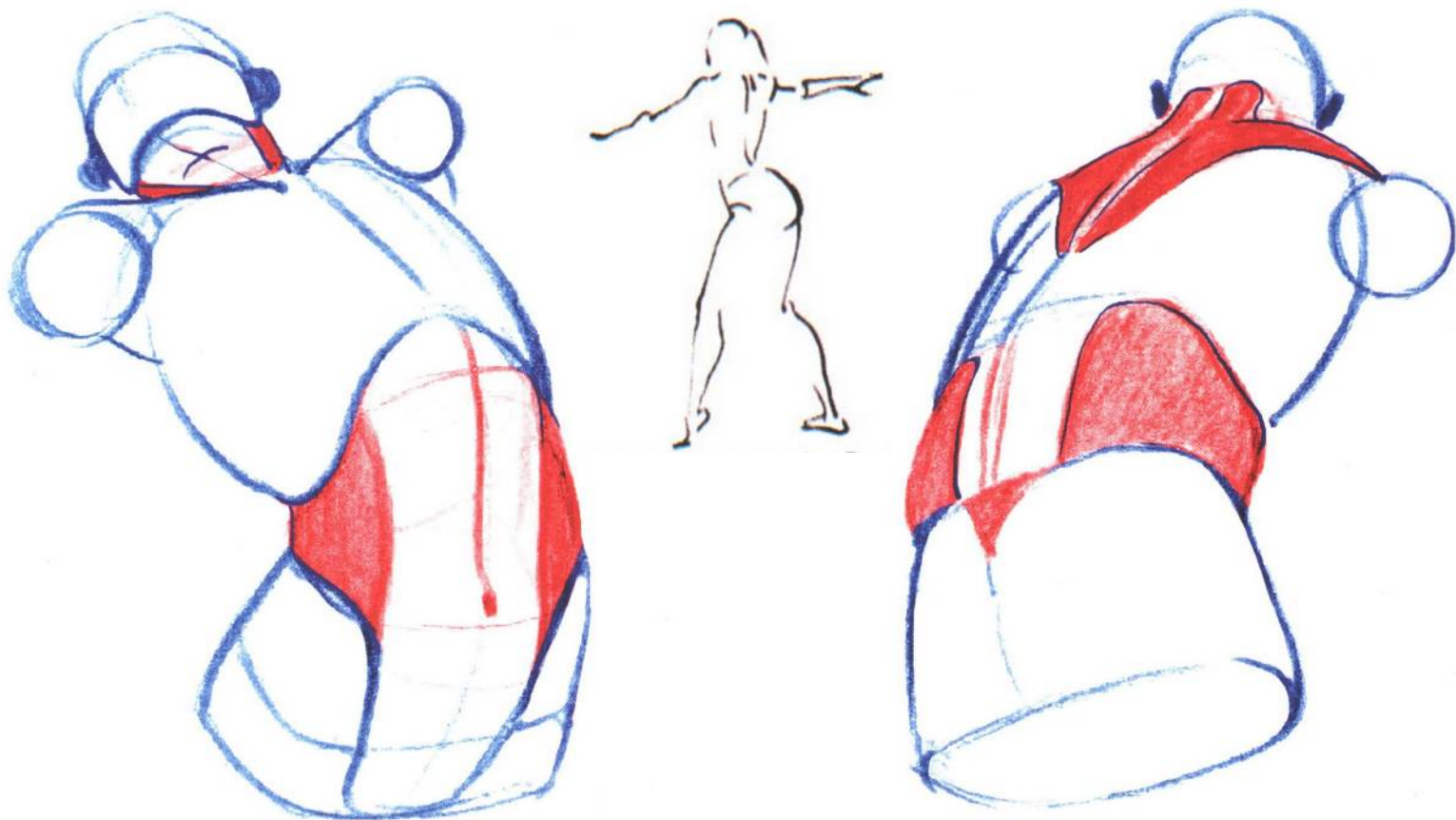


We can divide the torso into dynamic and static areas. The bones of the head, chest, and hips have a small range of motion, and the morphology of the torso mainly depends on the neck and waist.

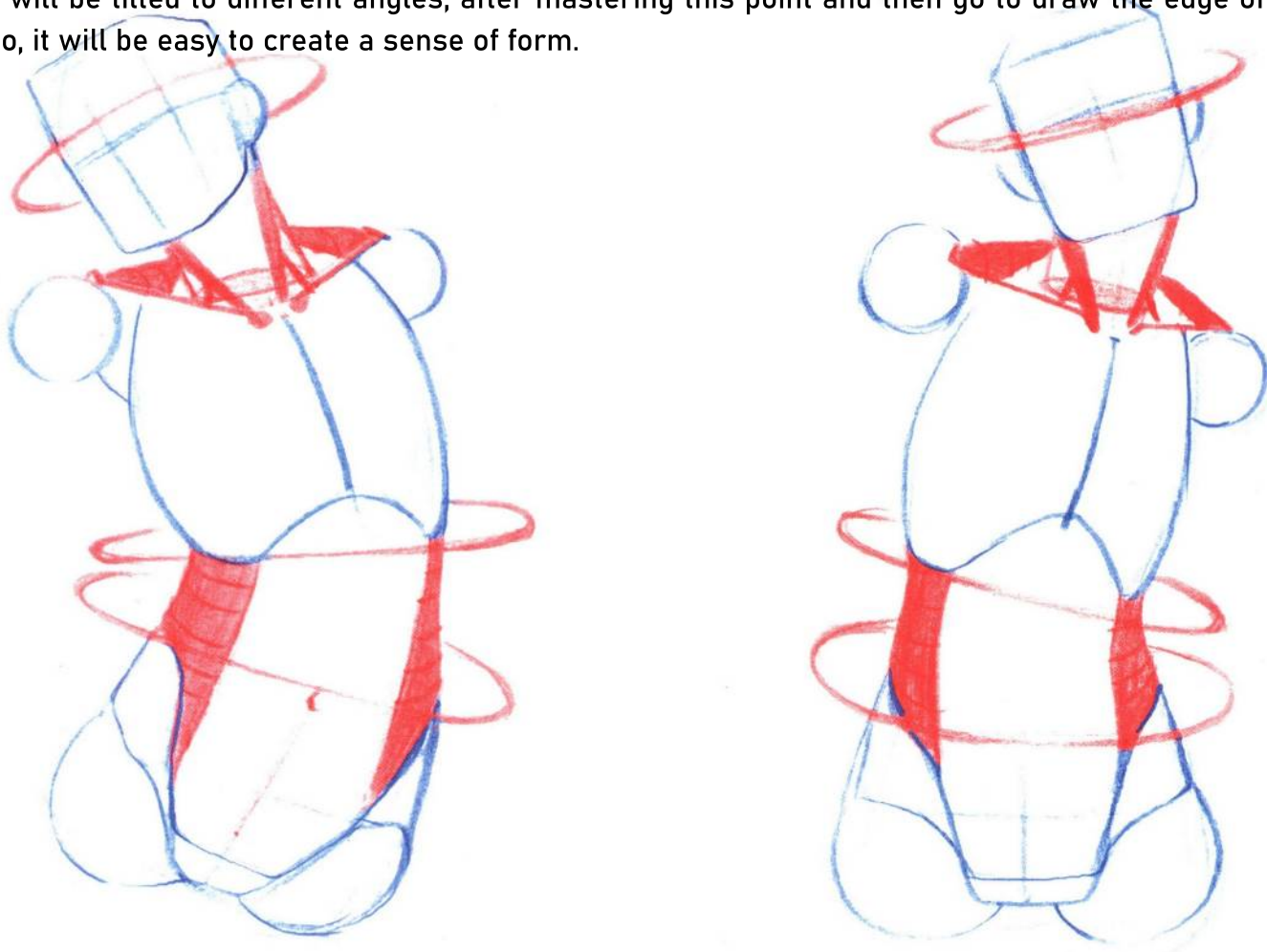


The combination of cubes and cylinders is necessary to understand the spatial state of the torso. We can use cylinders and cubes to represent the torso. Cylinders are closer to the real shape of the torso because the body is generally rounded, while cubes represent the thickness of torso better.

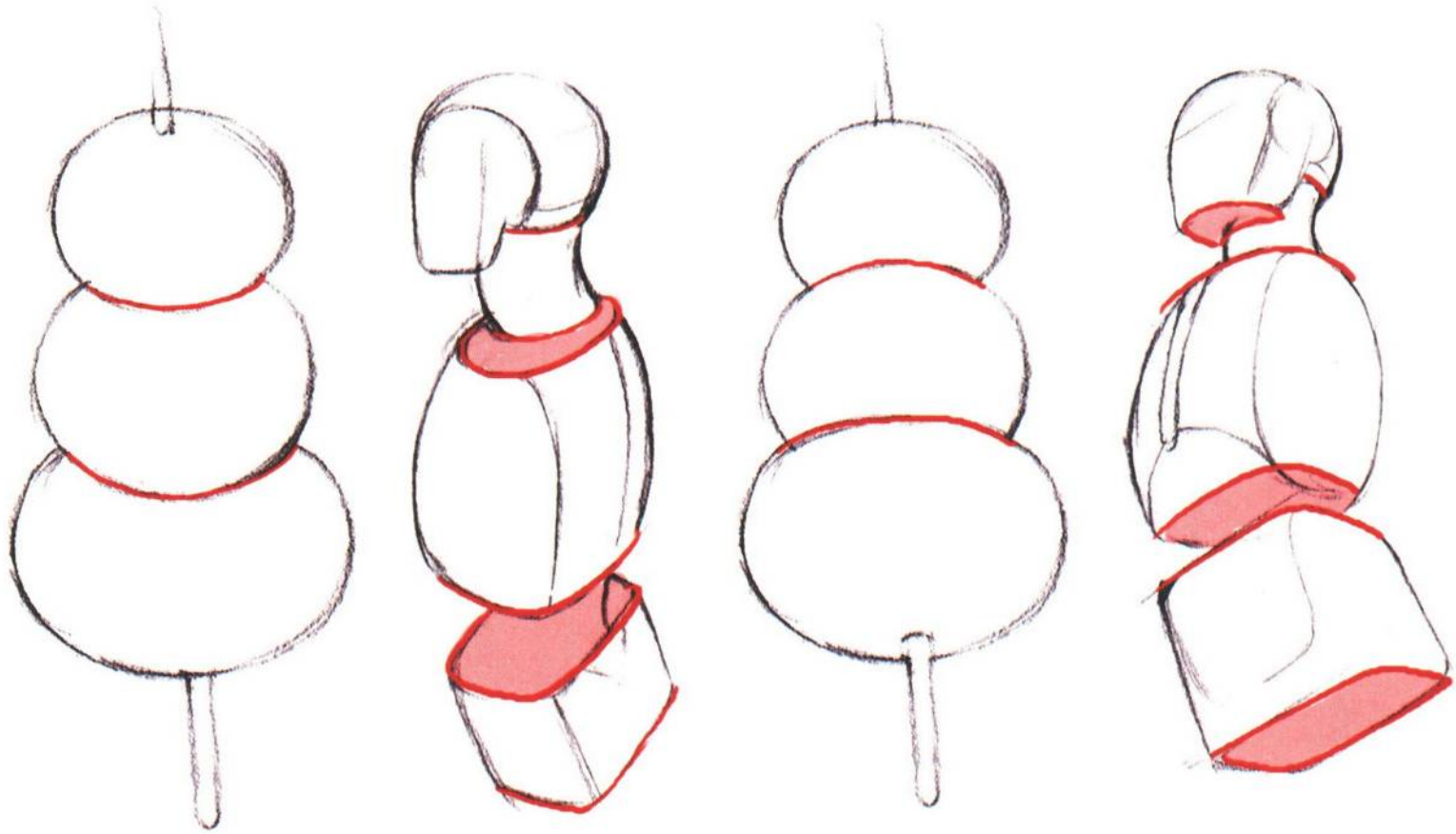
When we draw the torso, we need to pay attention to the shape of the neck and waist. If the dynamics of the neck and waist are well represented according to perspective, the torso will look more realistic when it is composed of several geometries.



To show the twisting state of the torso, we can put a ring on the torso. When the torso is twisted, the ring will be tilted to different angles, after mastering this point and then go to draw the edge of the torso, it will be easy to create a sense of form.



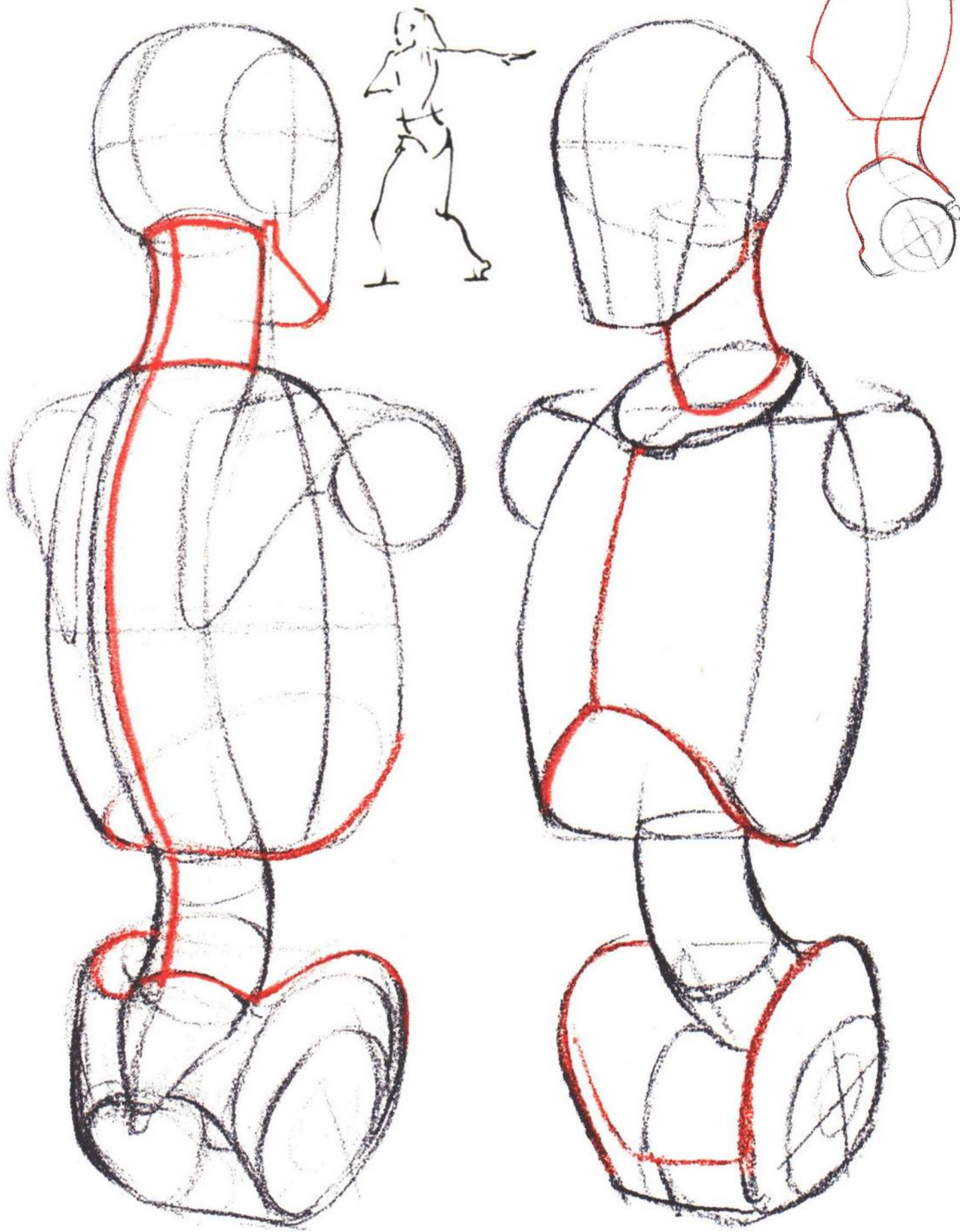
We can try to visualize the torso as a candy cane. When drawing the torso, the perspective of many parts of the torso is determined by the perspective of such a simple candy cane. When depicting the outline of the torso, the outline of the upper and lower interspersed relationships are determined by perspective, the outline of the torso interspersed reasonably and accurately, it is easy to show the perspective of the torso.

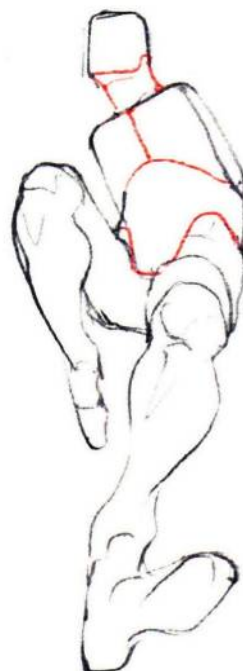
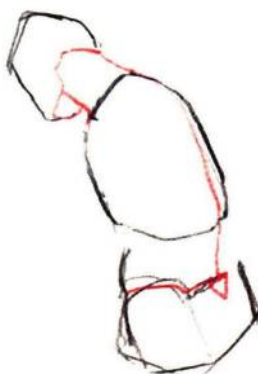
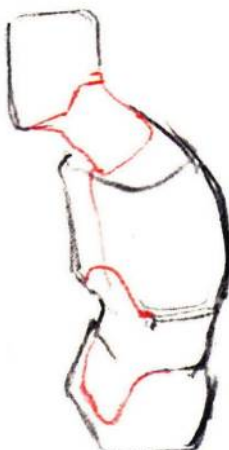
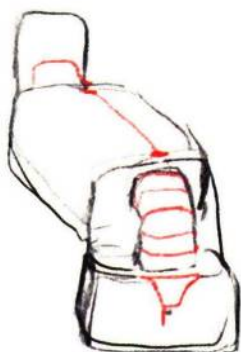
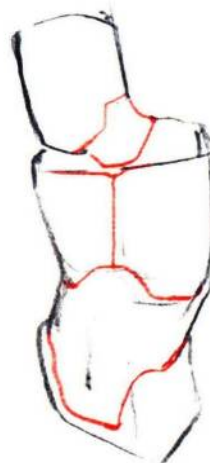
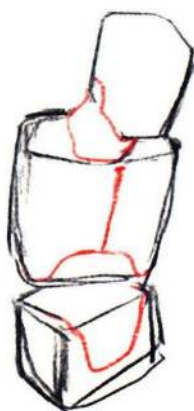
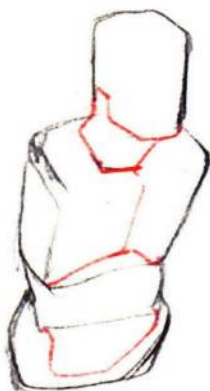
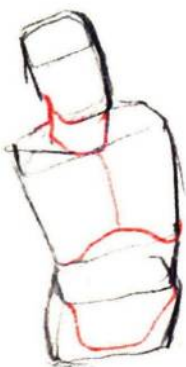
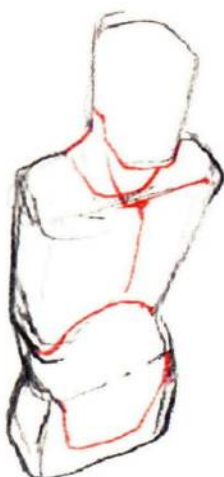
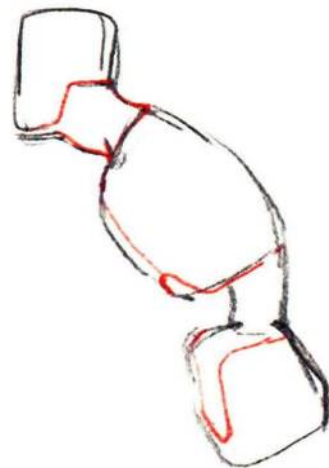
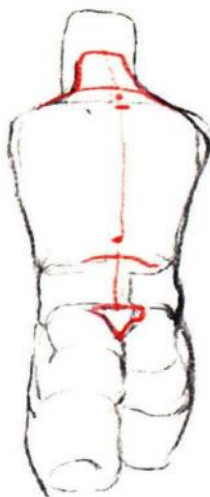
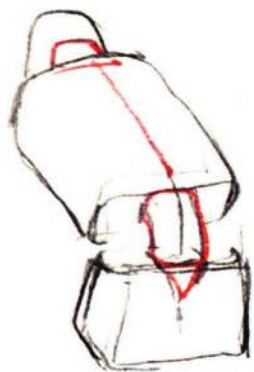


We can string sugar gourds sign as the spine, but the human body movement spine will not be as straight as this sign. When the spine is curved, we can make use of the curvature of the candy cane itself to shape the torso, analyze and express the different states of the torso through different curvatures, and then use the curvature of the torso to better express the state of the torso's movement, so as to draw the torso more vividly.



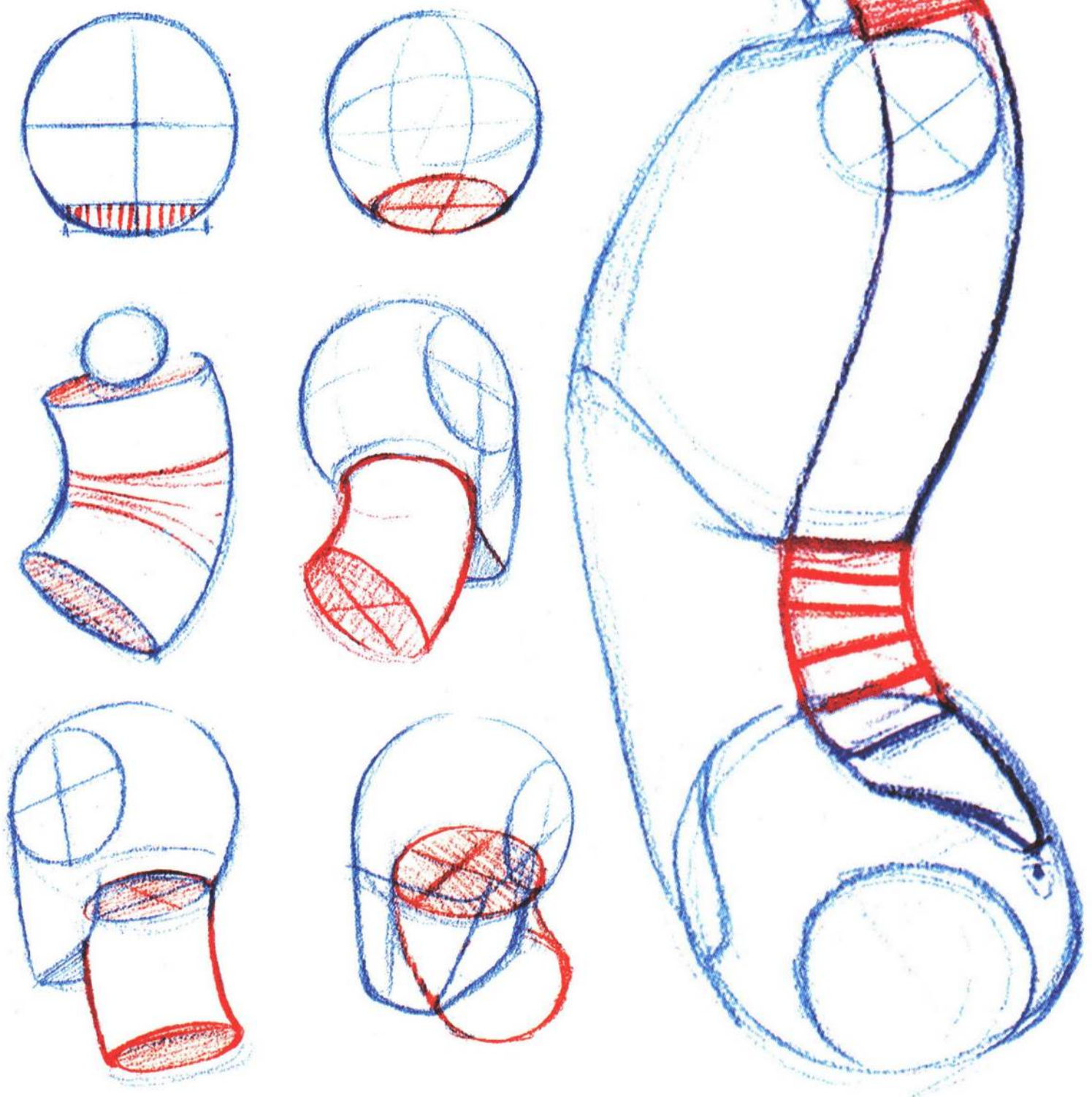
The most important part of the torso is the skeleton, and the representation of the spine within the skeleton is particularly important when we shape the torso. When connecting the squares and cylinders used to shape the torso, make sure that there are no mistakes when connecting them, so that the shape of the torso will be reasonable.

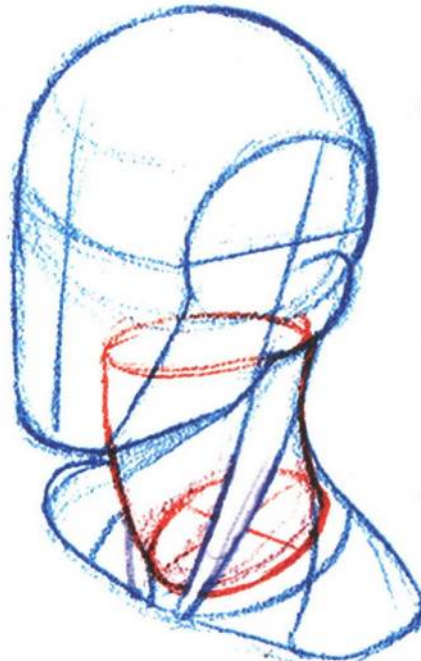
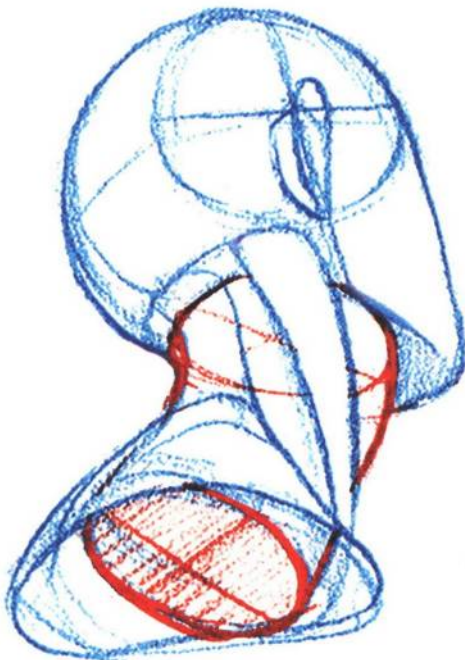
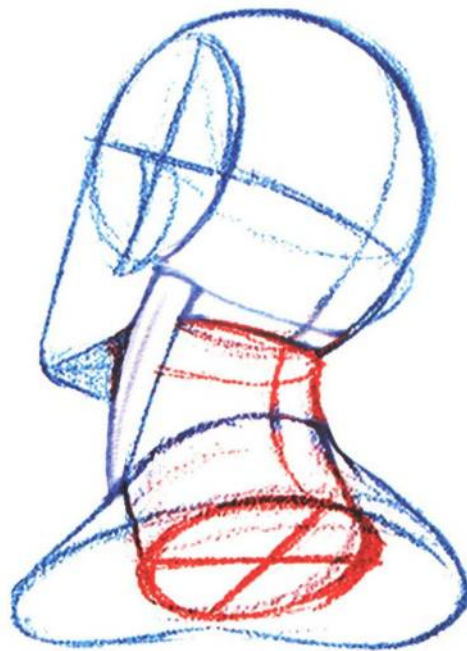
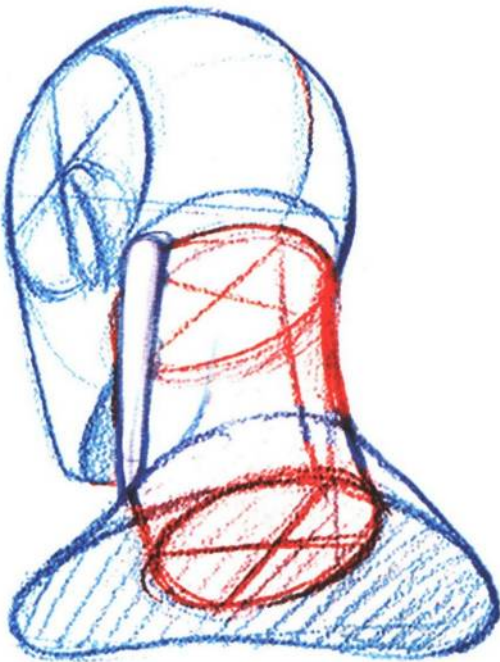




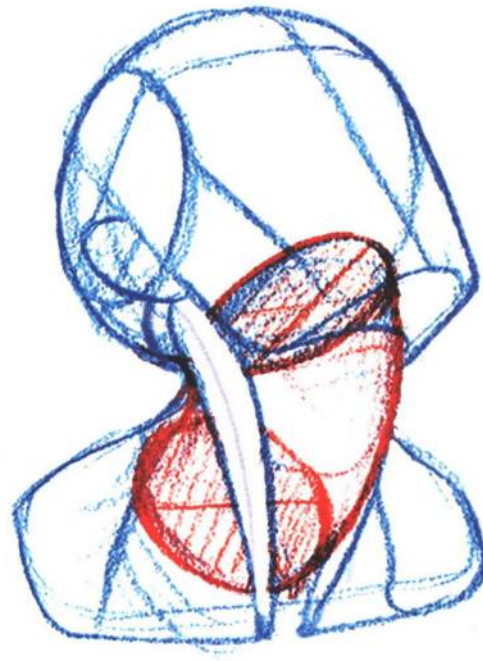
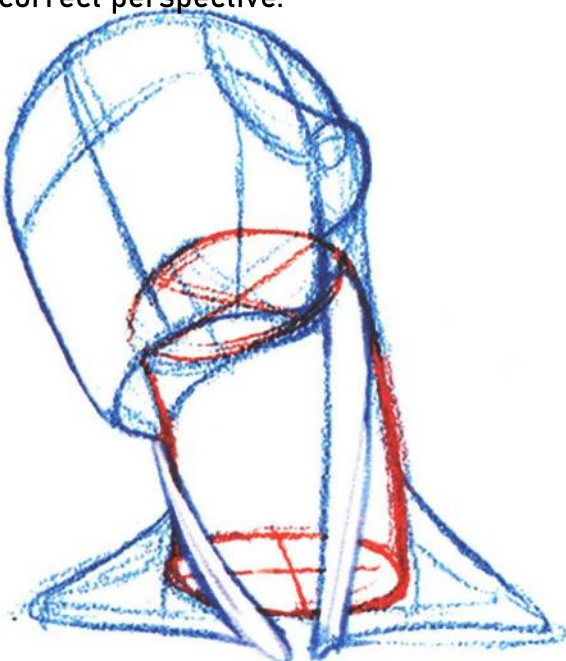
02 Structure of the neck

To understand the structure of the neck, we can simplify the head by looking at it as a sphere and finding the point of connection between the neck and the sphere. The neck is like a hose that moves the head. The geometry we use to represent the neck is a cylinder, so we need to feel its three-dimensional relationship, find the cross-section of the cylinder from different angles and represent it accurately.

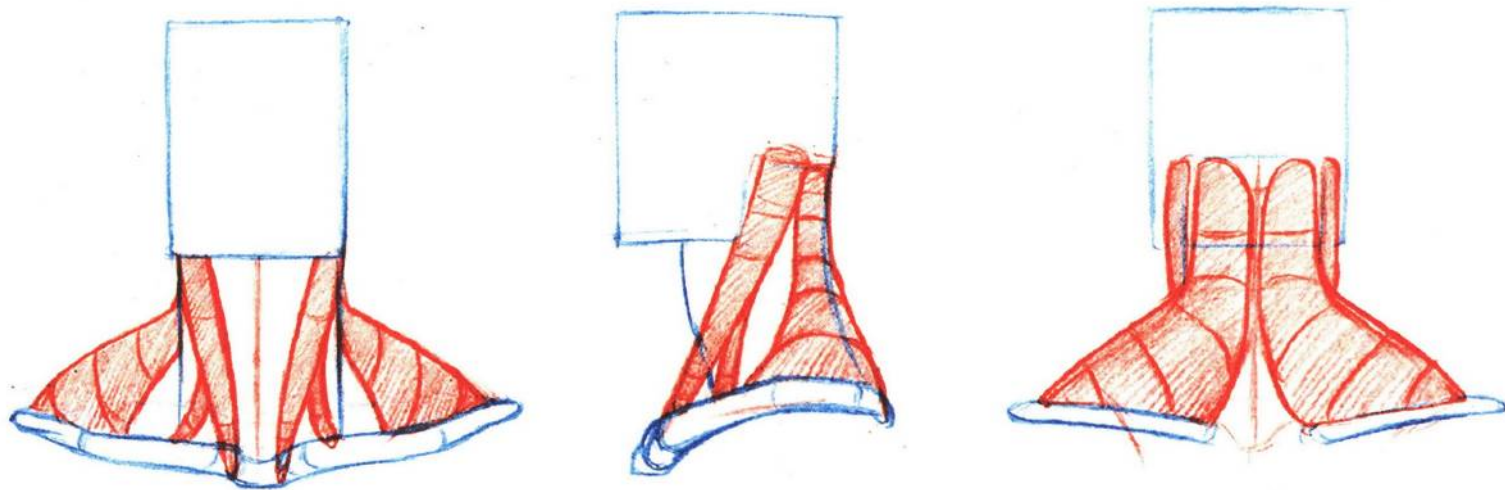




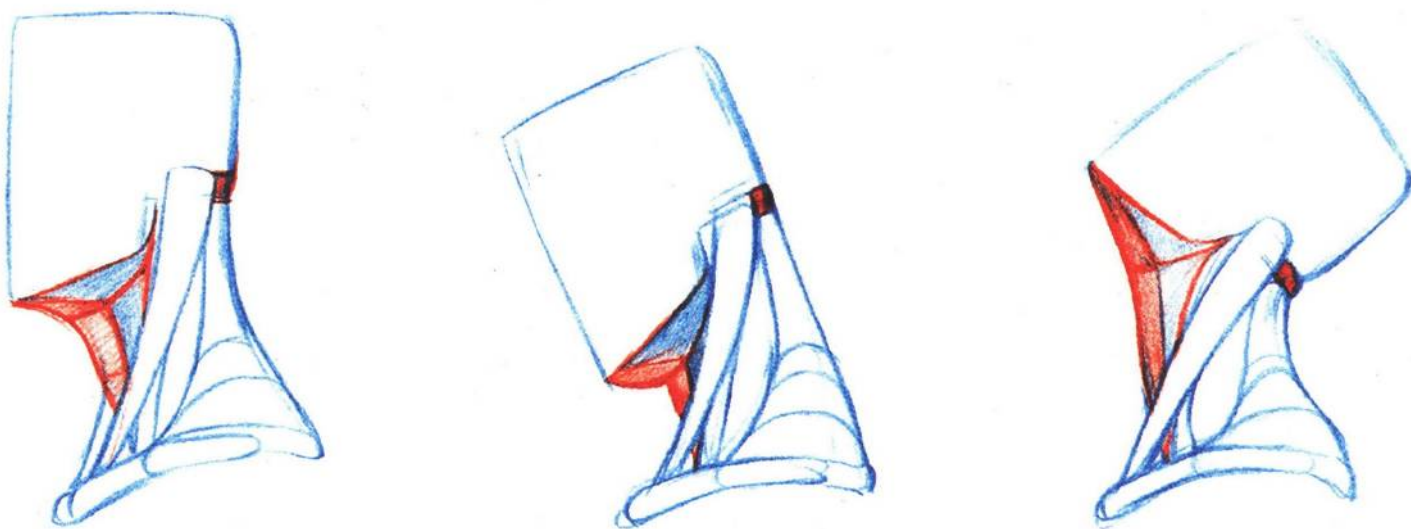
The spatial relationship between the head and the neck can be clarified by controlling the cross-section of the cylinder as it twists and turns, and by adding the muscles around the cylinder to the correct perspective.



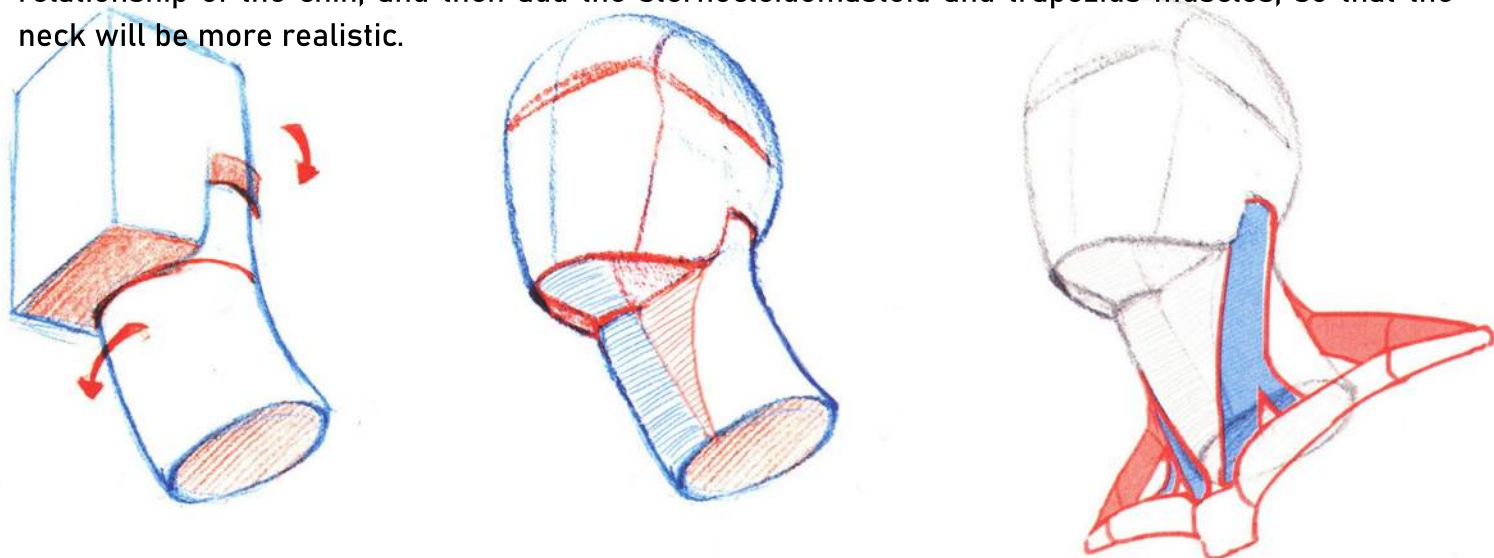
The musculature of the neck is complex, and can be simply summarized into two main parts: the sternocleidomastoid and the trapezius. The sternocleidomastoid is the muscle that connects the base of the ear to the clavicle; the trapezius is a larger muscle group that, when viewed from the back, belongs to the posterior half of the square body and extends to the scapulae; the trapezius also has a lower half, but here we will first look at the neck range of muscle groups.

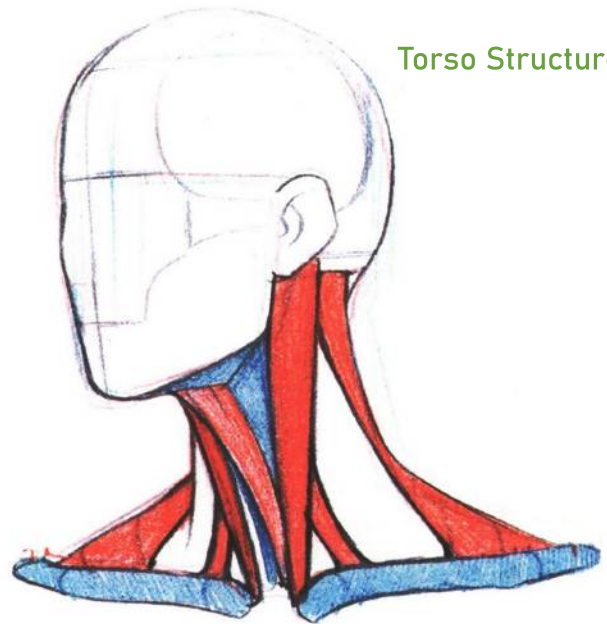


The chin is close to the neck, giving it a certain dimension. In order to draw the neck, we need to understand the structure of the chin and divide it into effective areas.

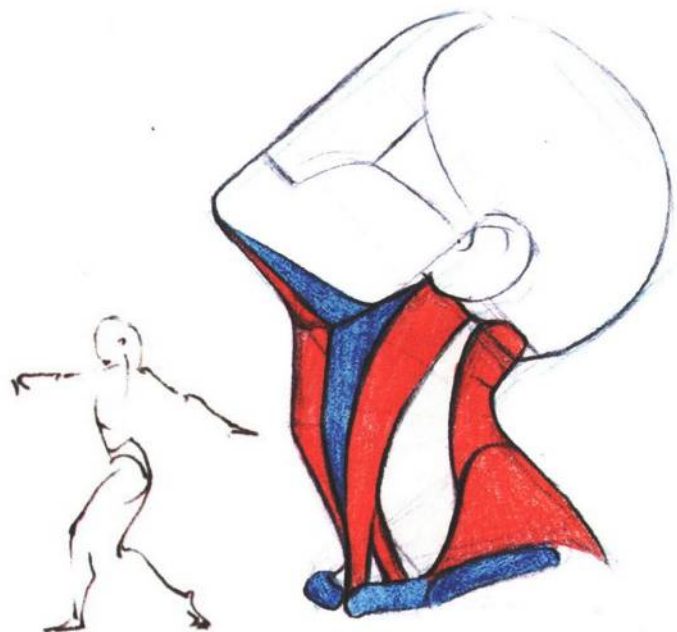


As you can see in the figure below, from a more oblique angle, there is a morphological transition between the blue and red areas of the chin. When we draw the neck, we can first draw the transition relationship of the chin, and then add the sternocleidomastoid and trapezius muscles, so that the neck will be more realistic.

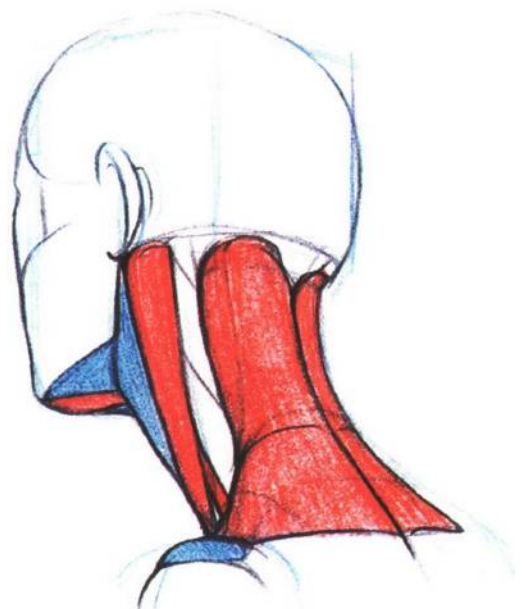




After understanding the muscle distribution of the neck, we can better understand the neck line in different angles of the interspersed relationship of the volume of the neck and the movement of the shoulders have a certain knowledge of the neck, we can draw the head and the body of the relationship between the connection is good.

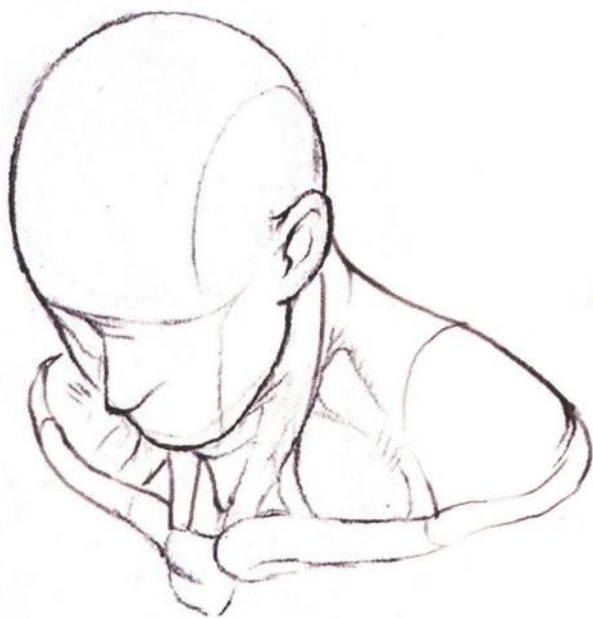
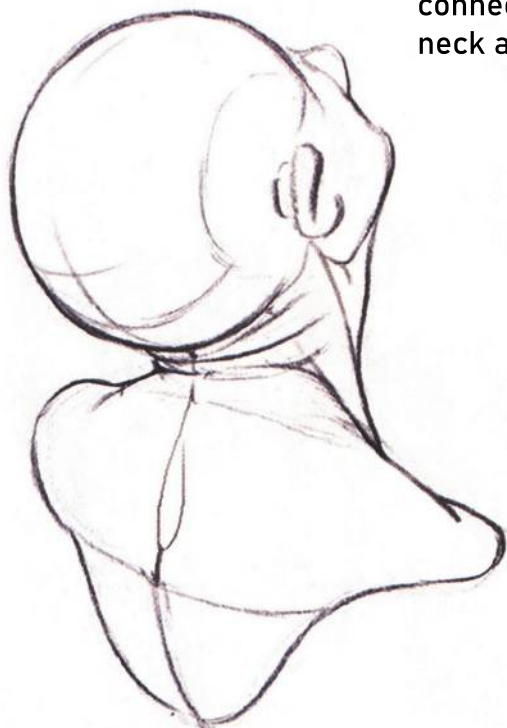


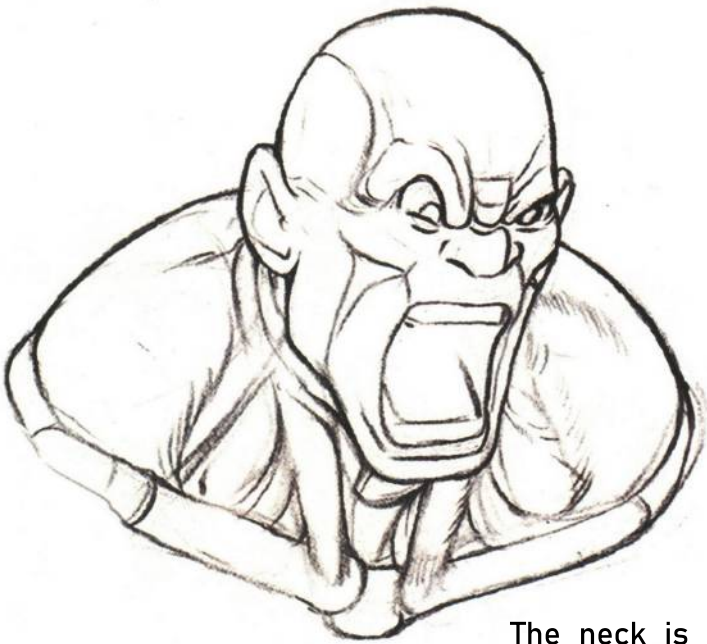
This is an important step to break through the predicament of only drawing the head.



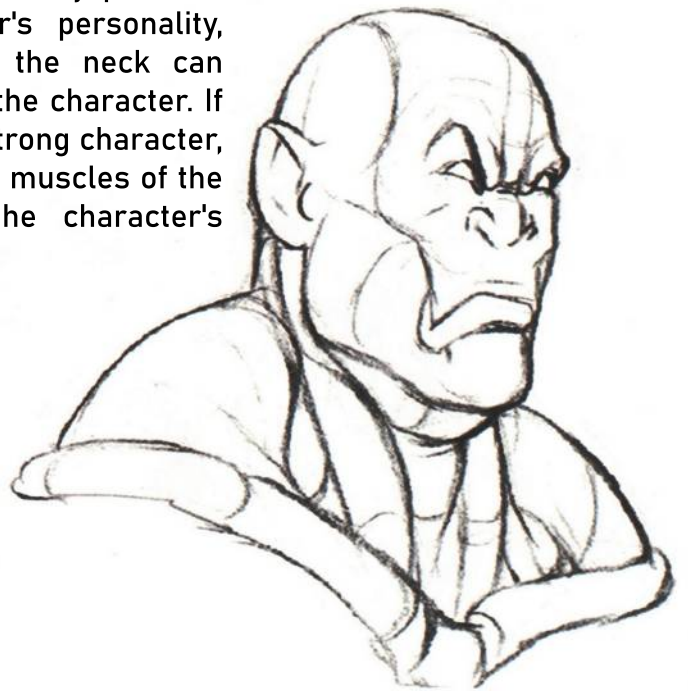
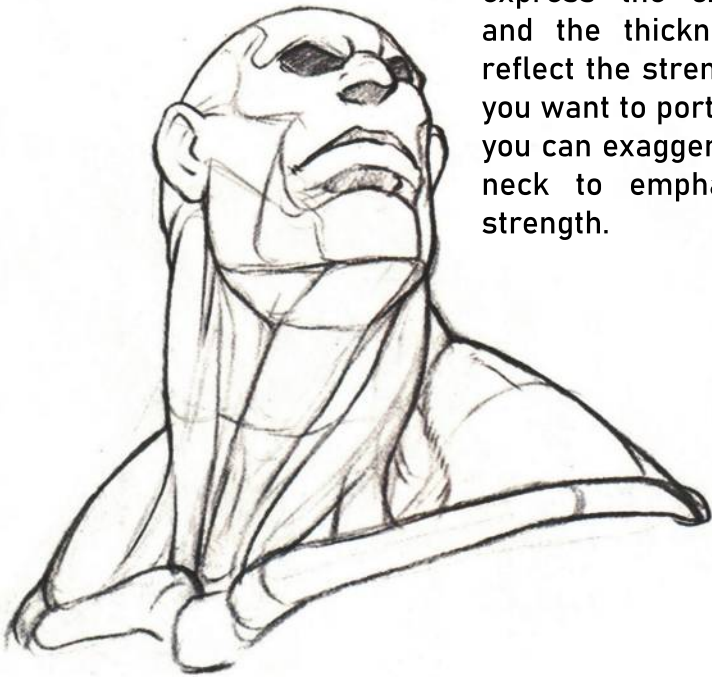


In order to shape the neck better, we can try to practice drawing the connection between the head and the neck at different angles.

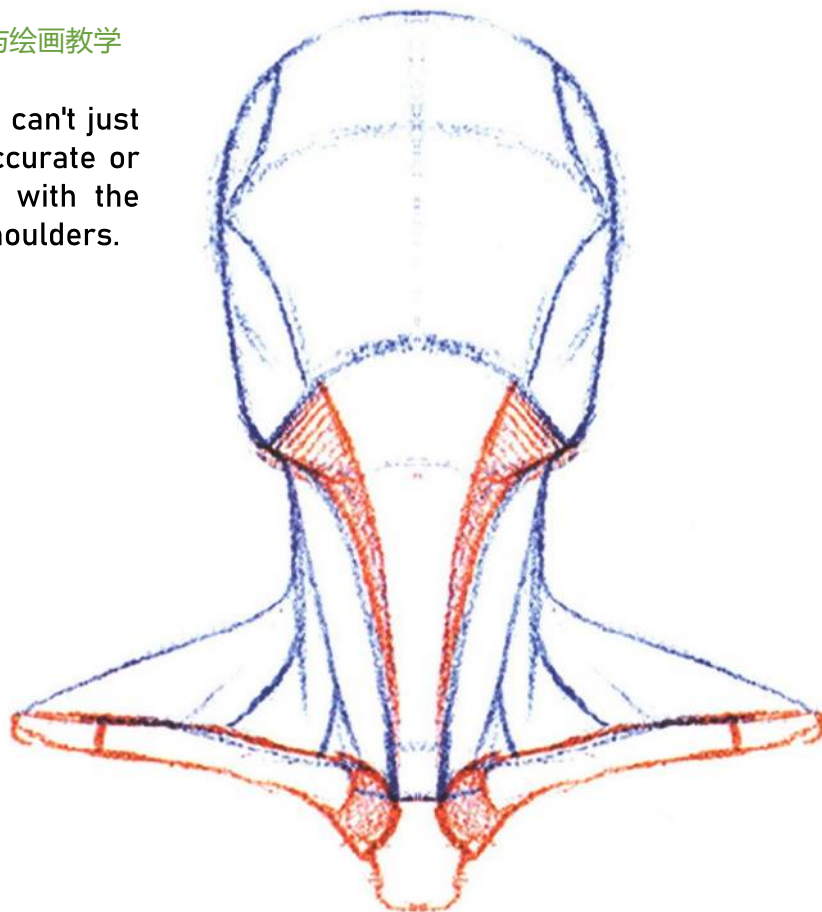
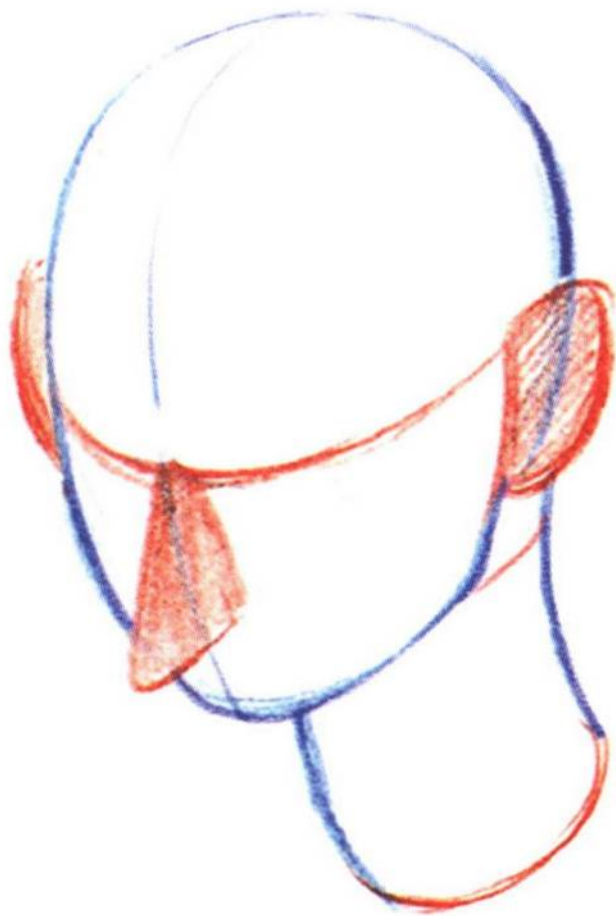




The neck is one of the key parts to express the character's personality, and the thickness of the neck can reflect the strength of the character. If you want to portray a strong character, you can exaggerate the muscles of the neck to emphasize the character's strength.

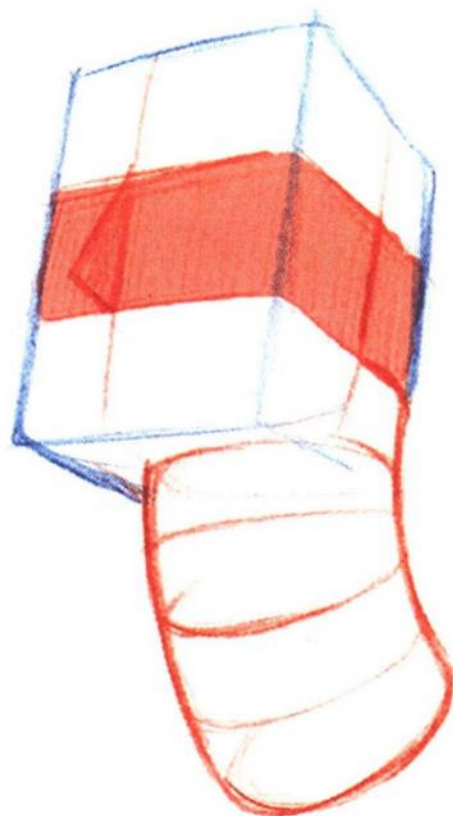
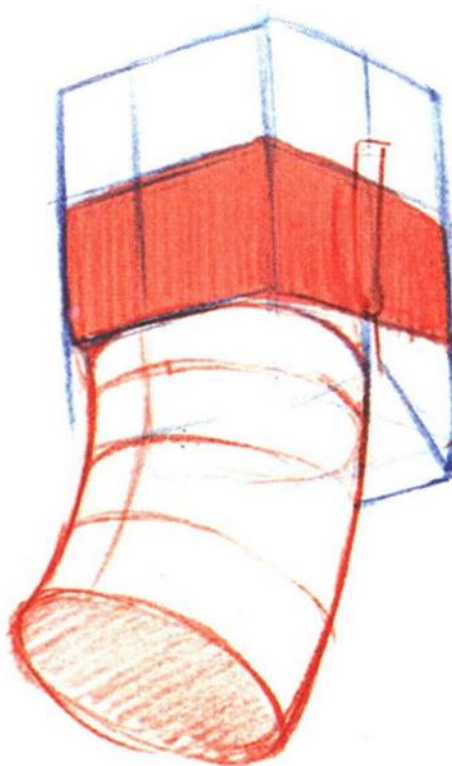
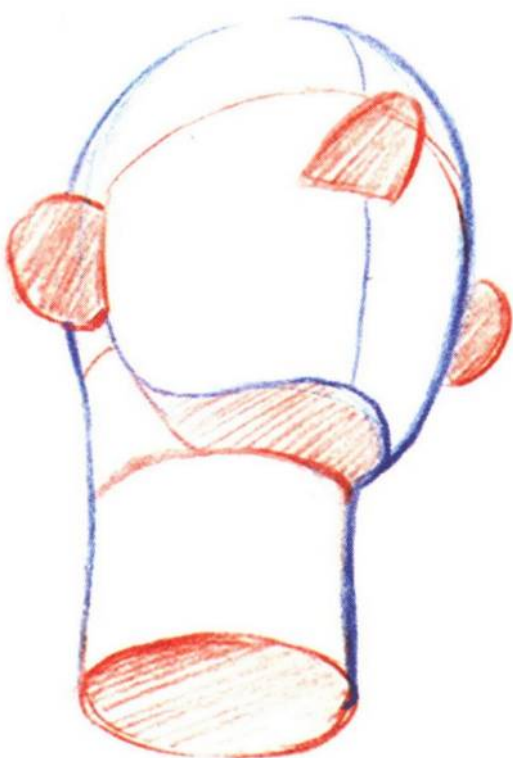


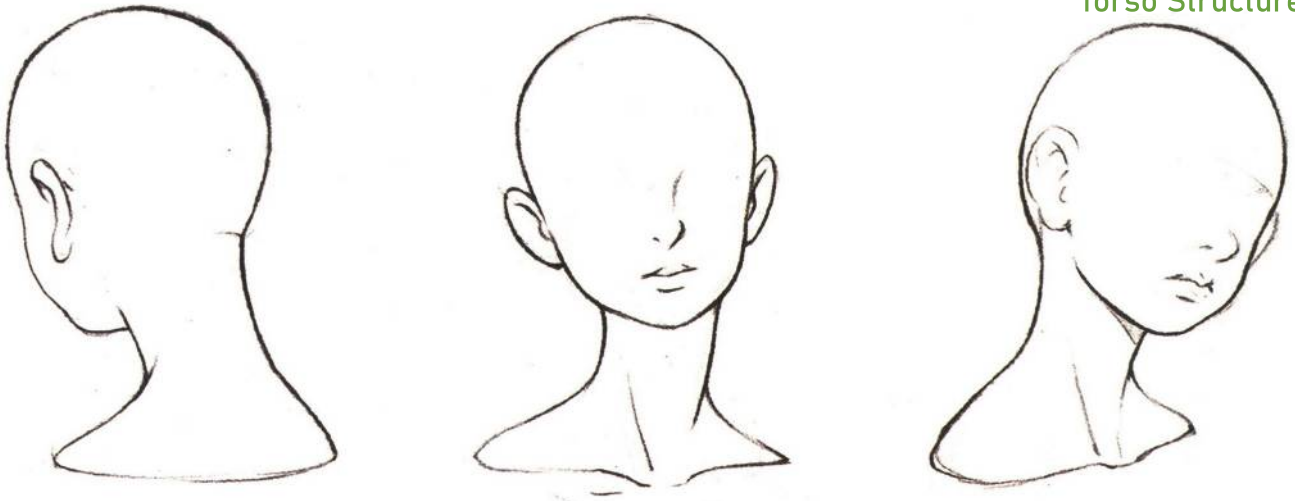
In order to create a more natural neck, we can't just focus on whether the neck structure is accurate or not, the most important thing is to deal with the relationship between the head, neck and shoulders.



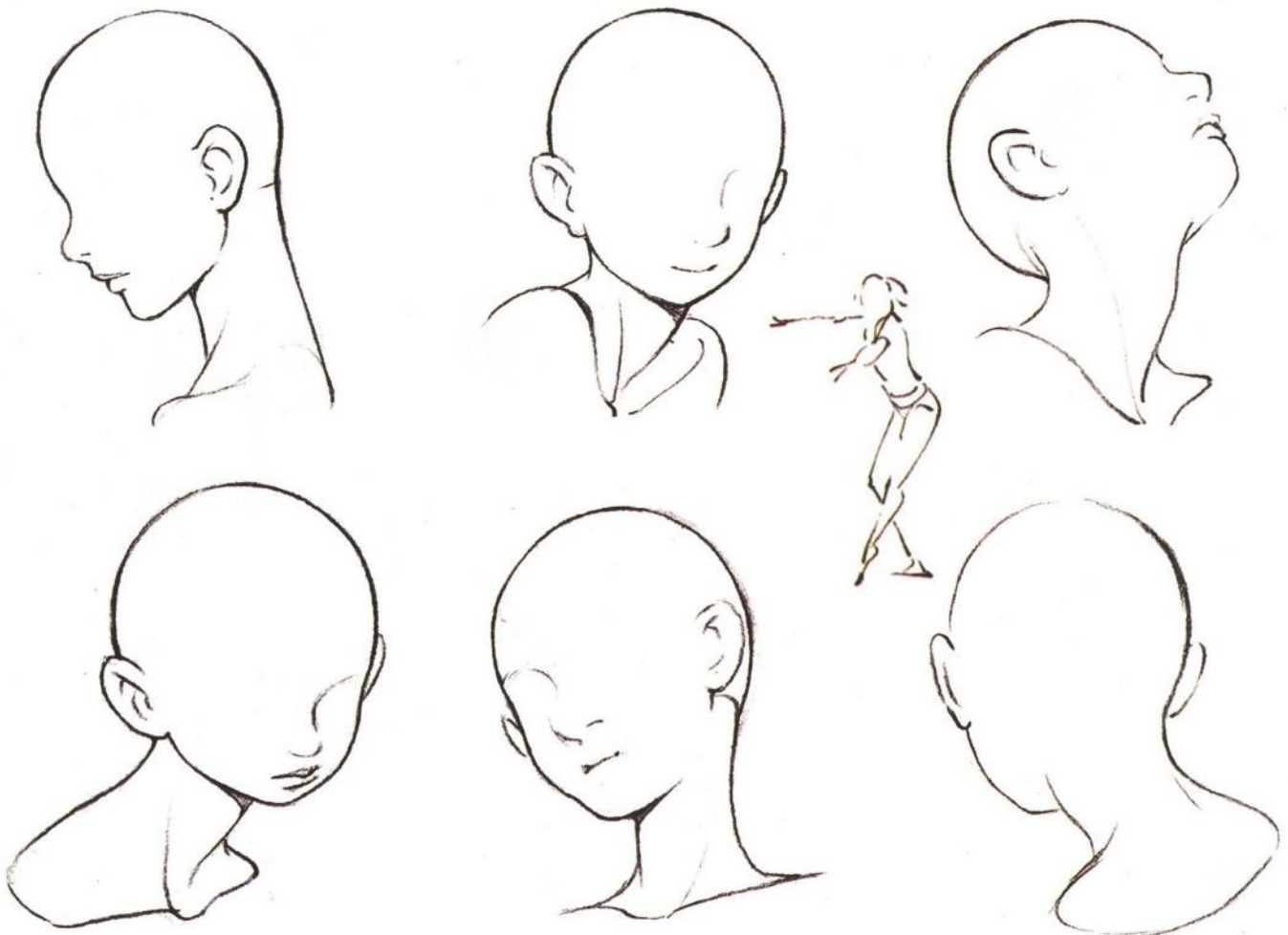
In the head structure, the perspective of the middle part of the cube is very important, and the connection between the head and the neck will be natural only when the perspective of the cube and the cylinder is correct.

In reality, the human head is not a cube, the width of the cube is roughly the same as the height of the ears and the nose, so if you handle the relationship between the ears, the nose, and the neck well, you will be able to draw the perspective of the head from different angles.

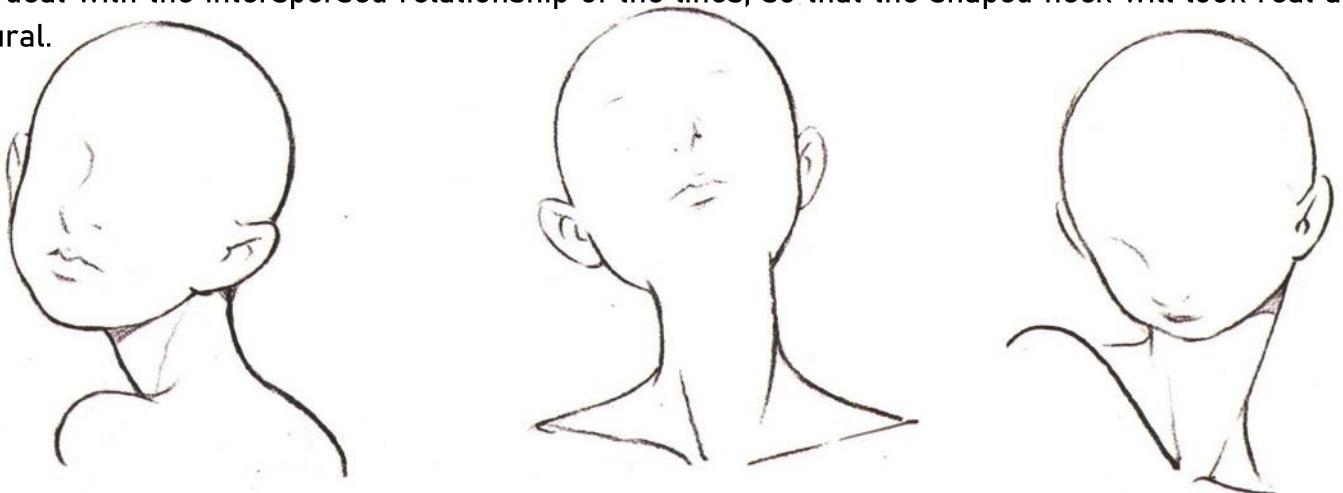


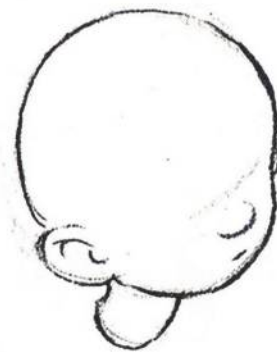
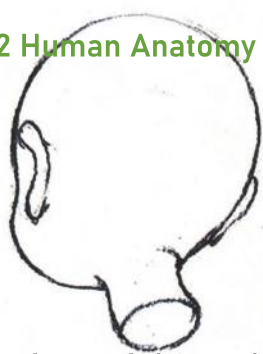


The neck of anime characters is not as complicated as the neck of real characters.

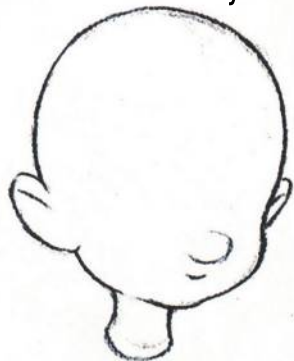


When shaping the neck, we utilize our knowledge of perspective to simplify the lines appropriately and deal with the interspersed relationship of the lines, so that the shaped neck will look real and natural.

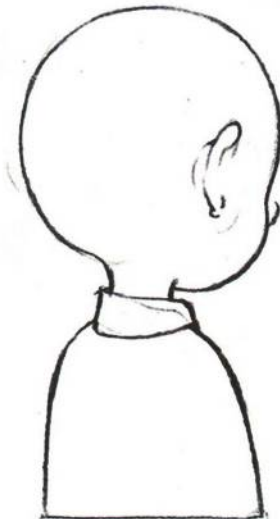
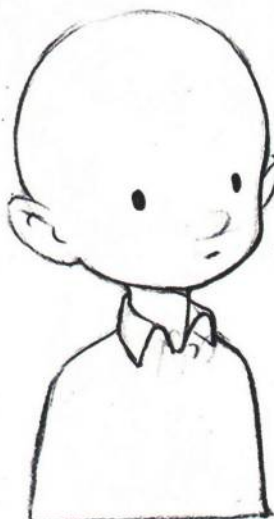
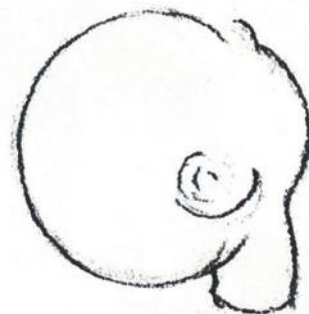
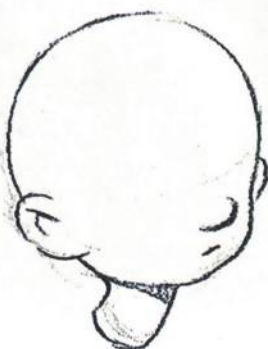
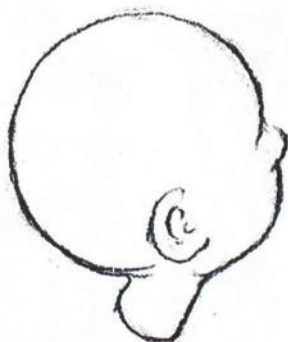
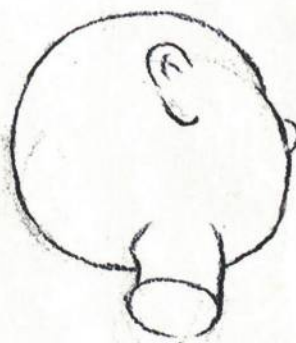




The form of the neck of the anime character is also very important, and it is important to make the neck look like a cylinder that can be reasonably expressed from all angles.

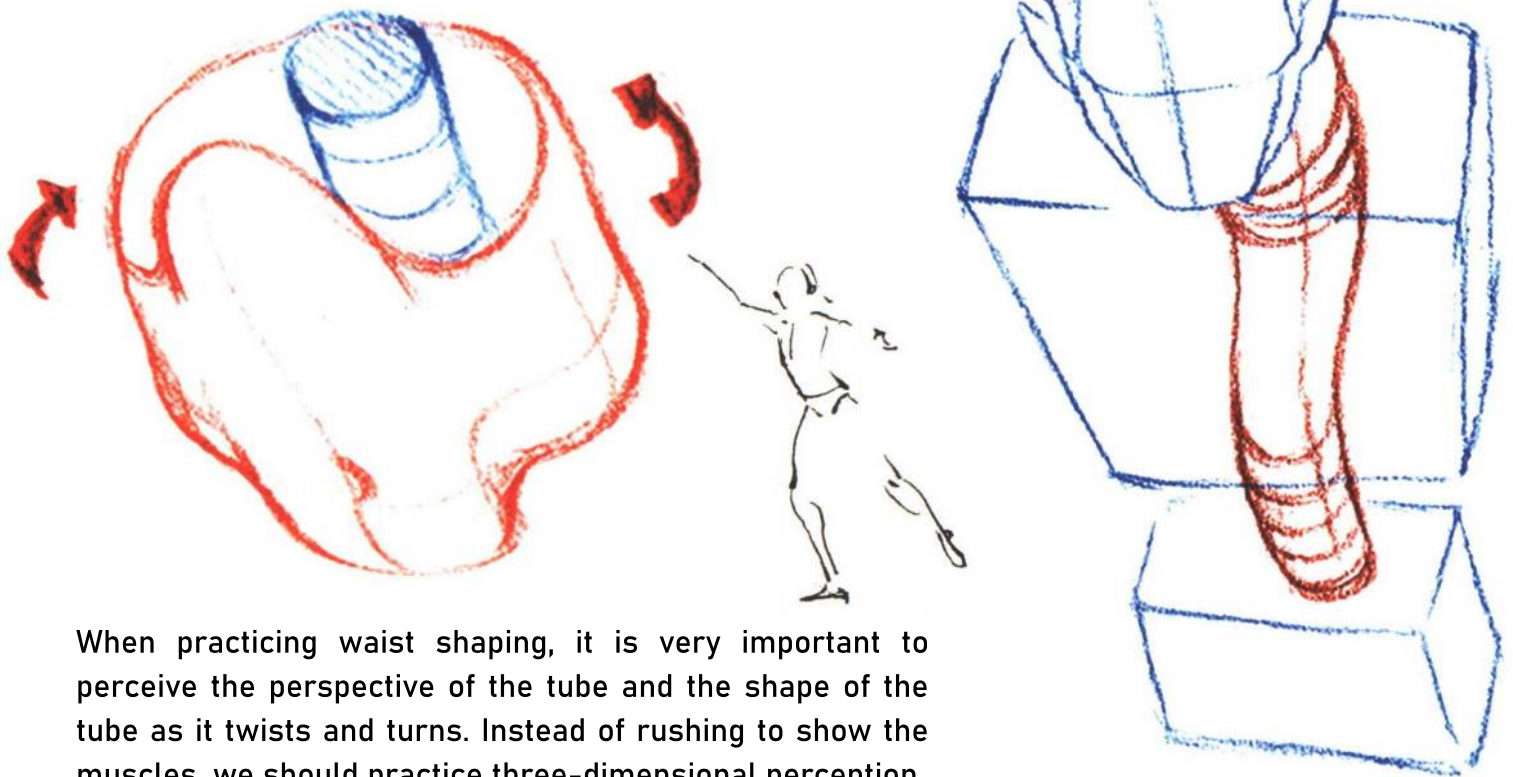


So that the neck has a feeling of form even if it is composed of only two contour lines.

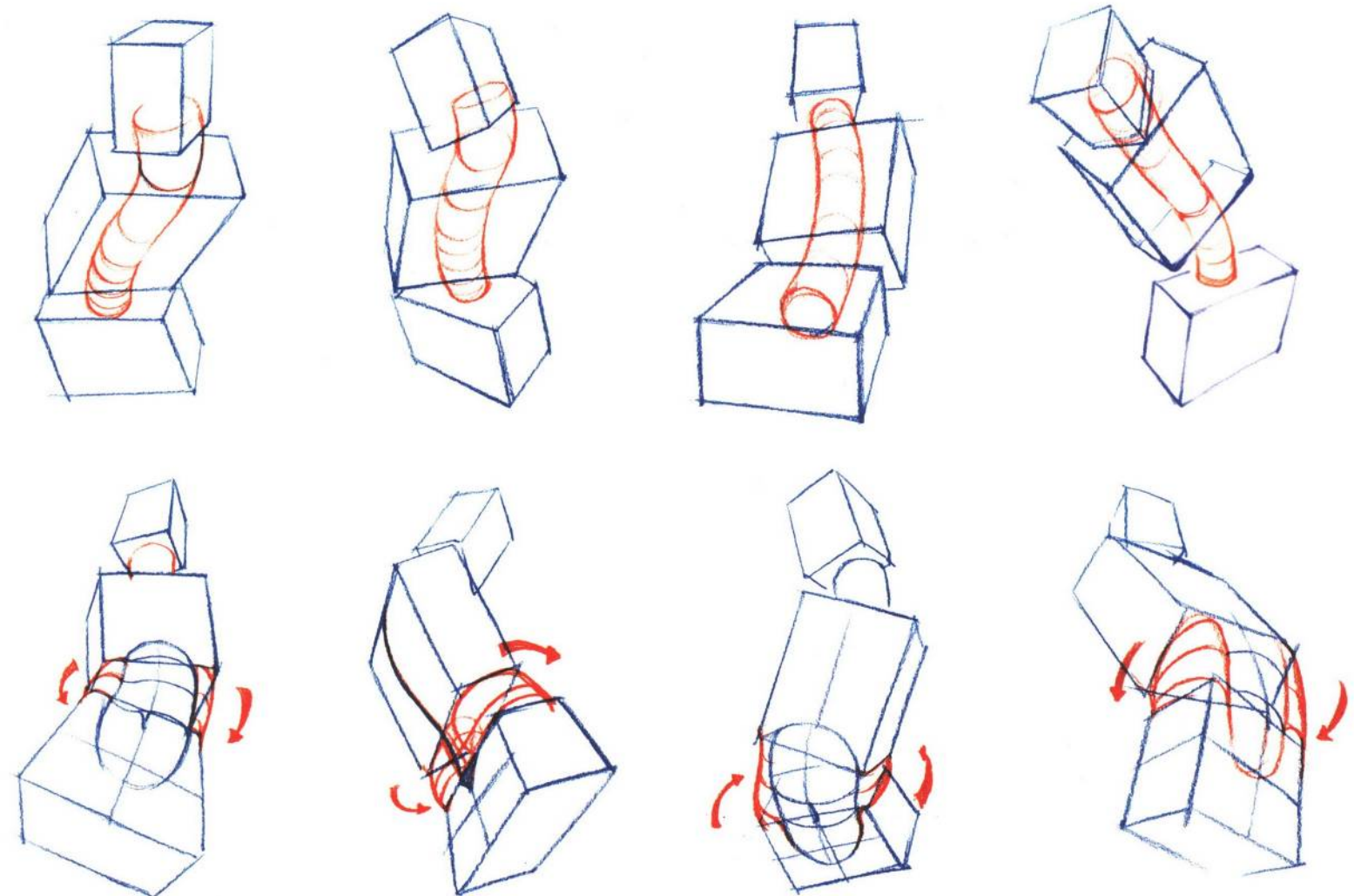


03 Structure of the waist

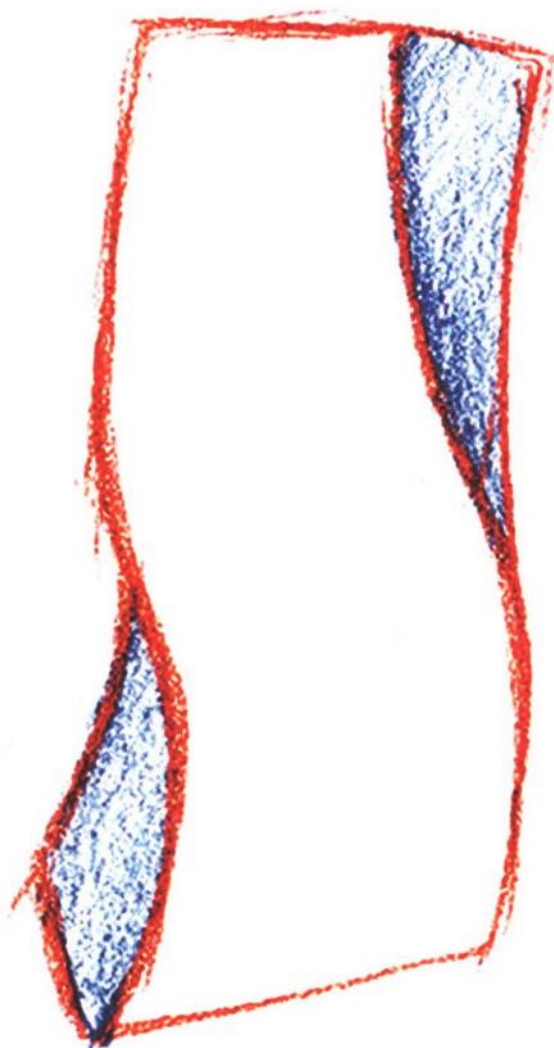
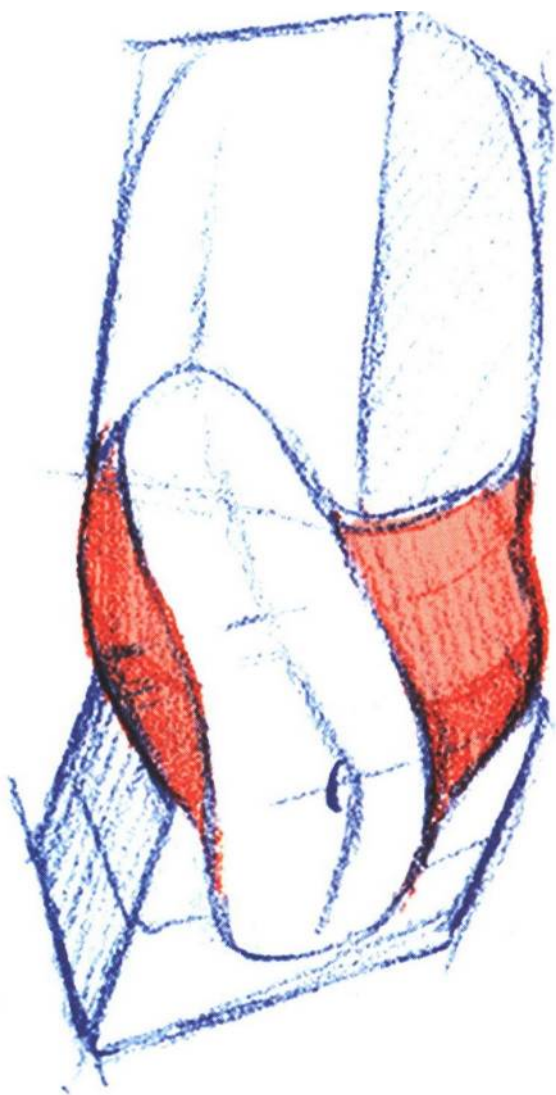
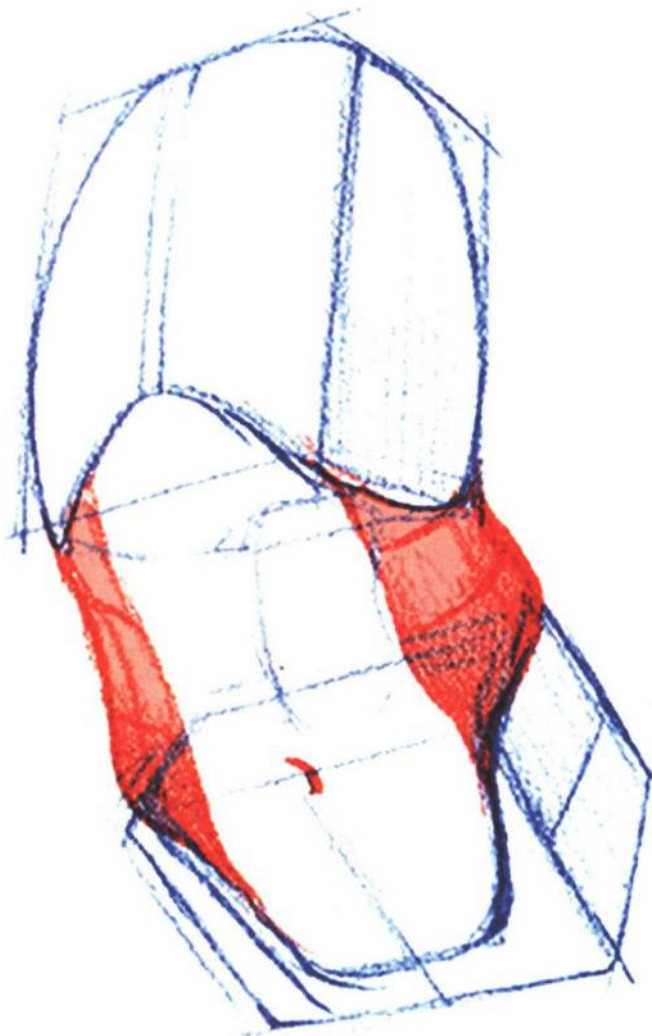
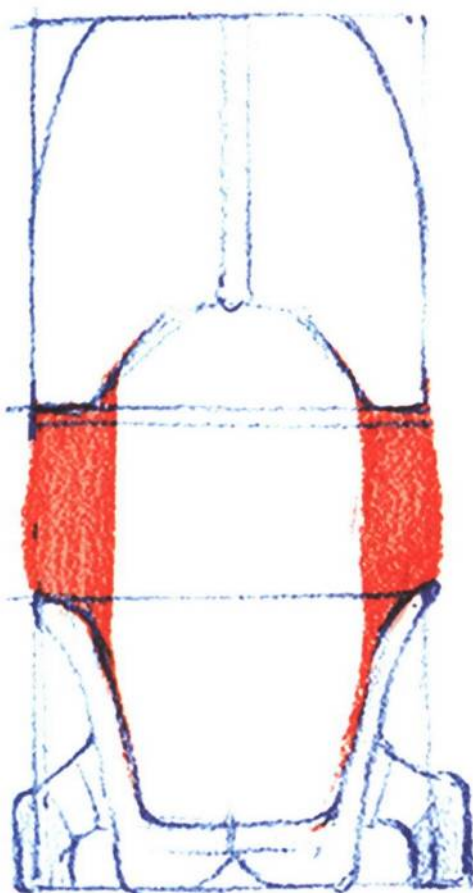
The waist is like a tube with fat wrapped around it, and the fat is soft, and it shapes with the movement of the waist.

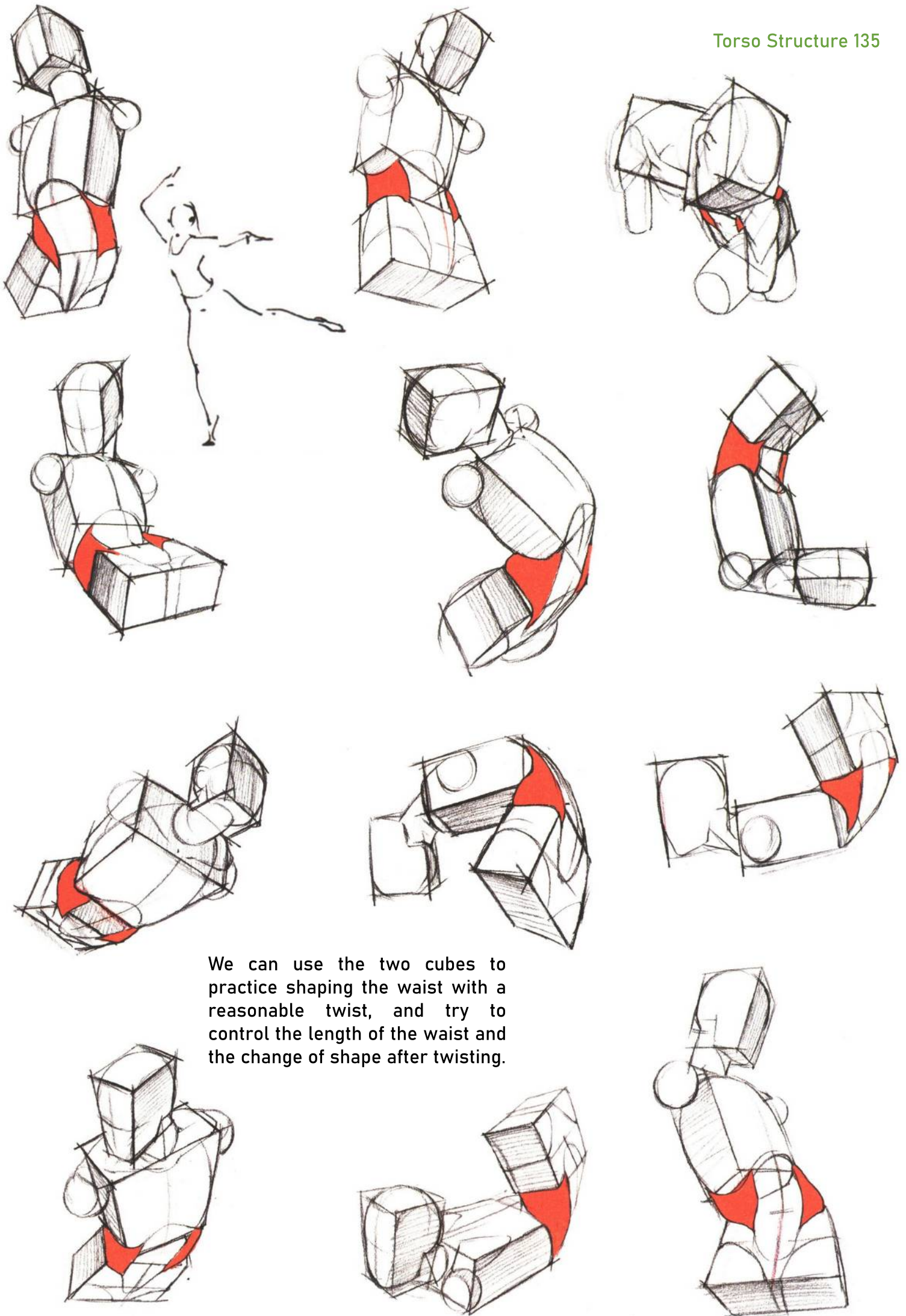


When practicing waist shaping, it is very important to perceive the perspective of the tube and the shape of the tube as it twists and turns. Instead of rushing to show the muscles, we should practice three-dimensional perception.

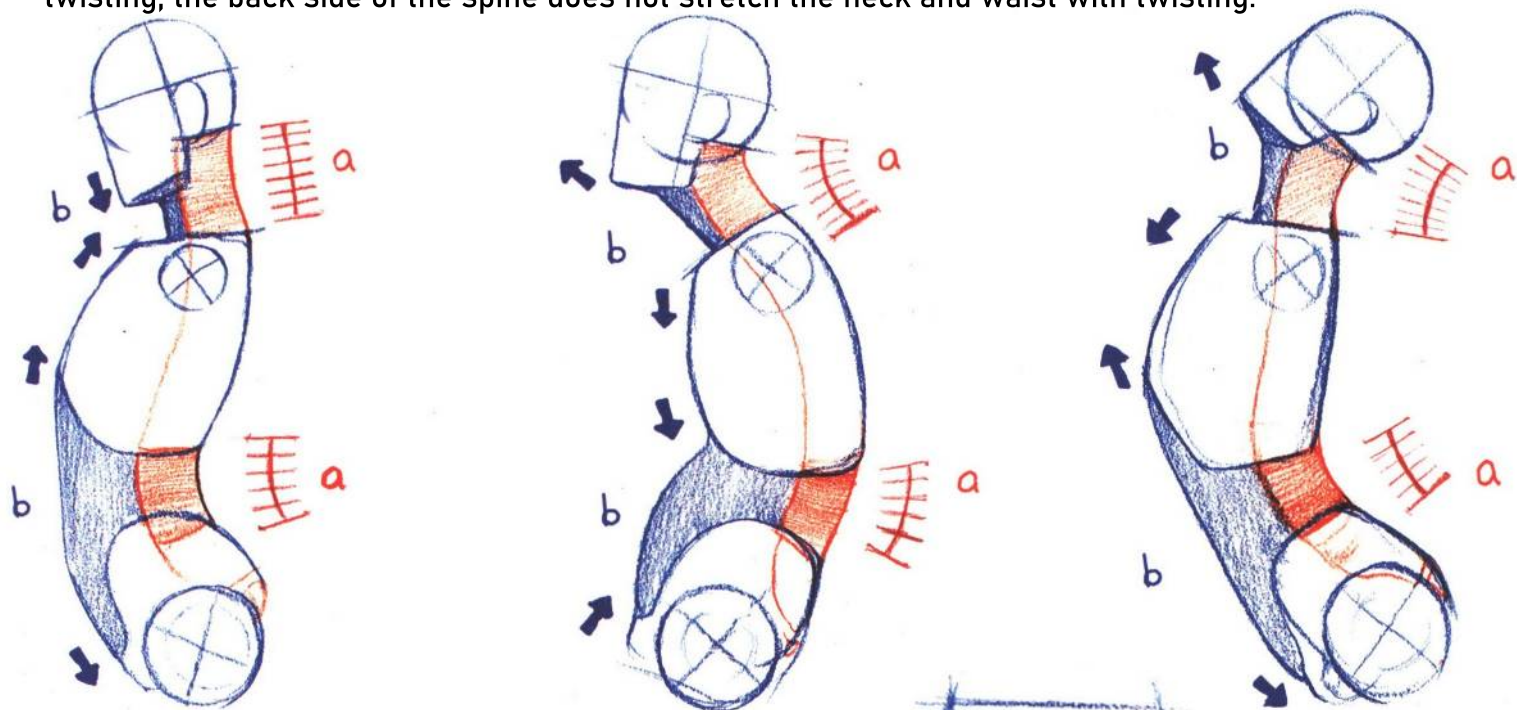


The lower back, thorax, and pelvis are supported by bones that are relatively rigid. The lumbar region is mainly wrapped by the rectus abdominis and external oblique muscles, and the supporting bone is the spine, which is soft and rubbery in shape and can be bent and twisted appropriately.

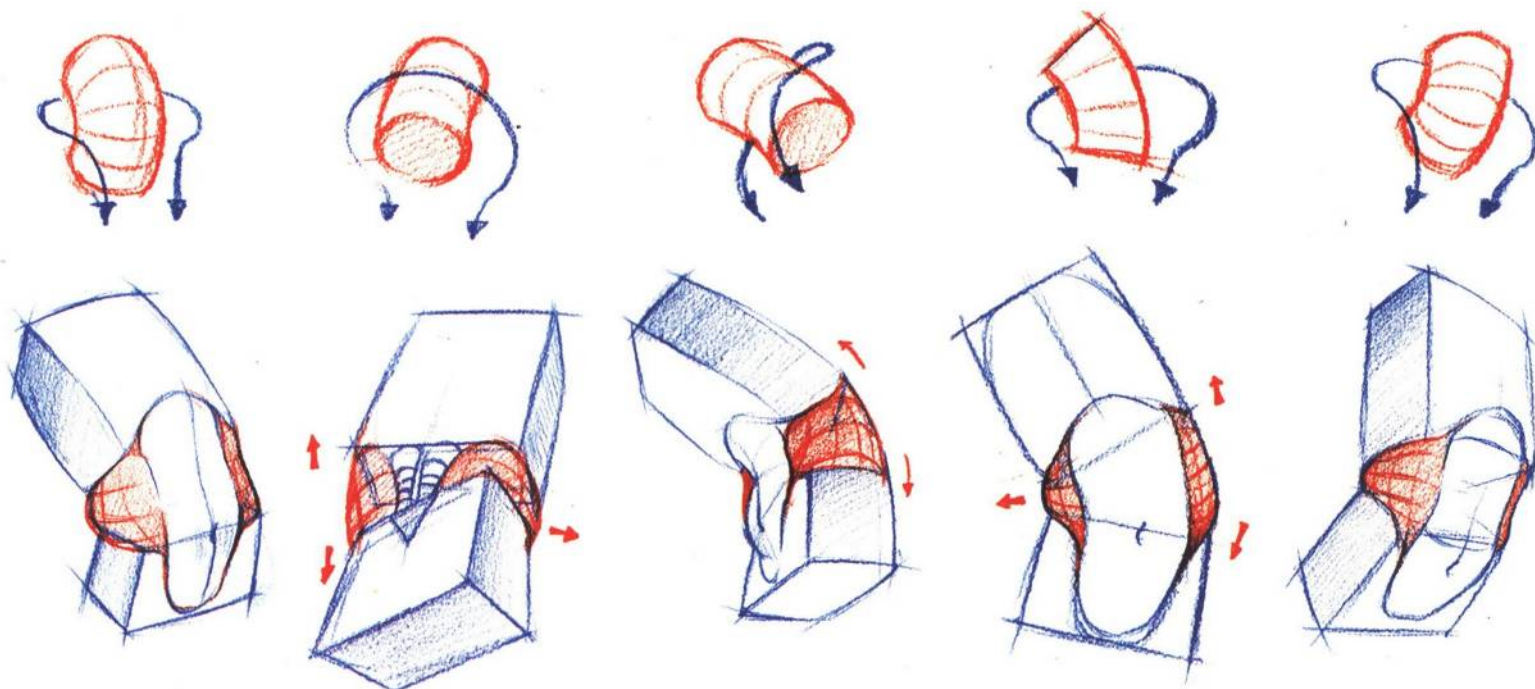
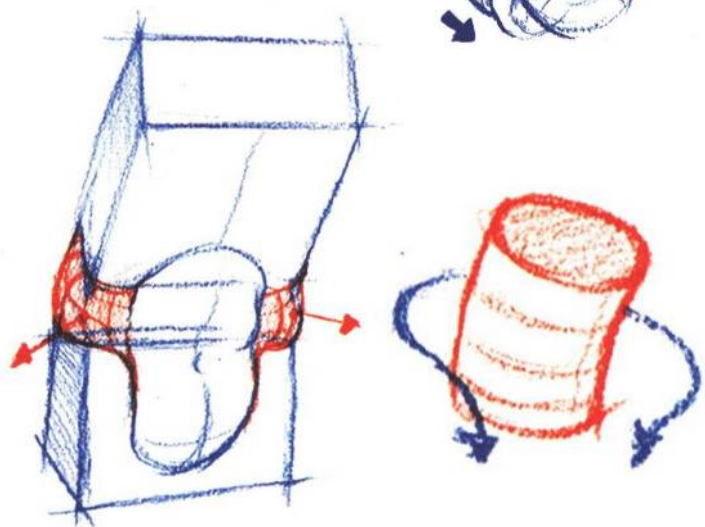




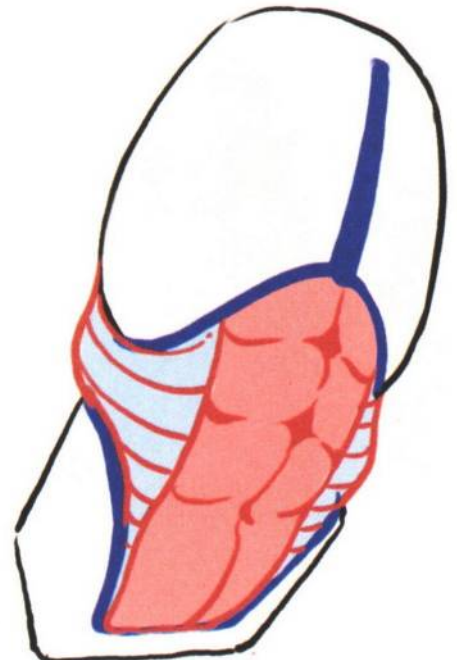
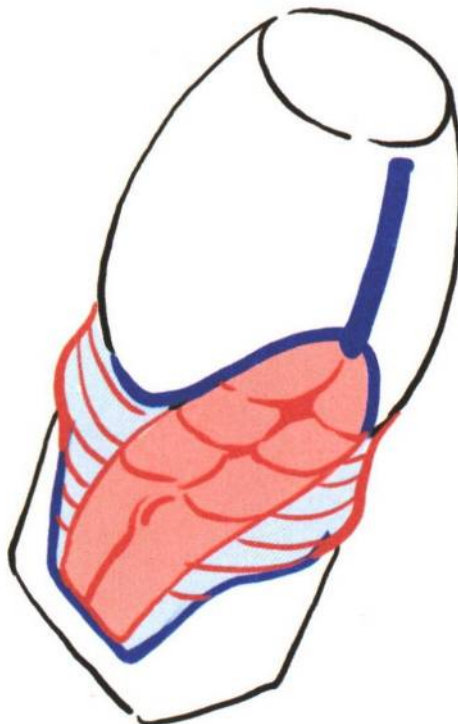
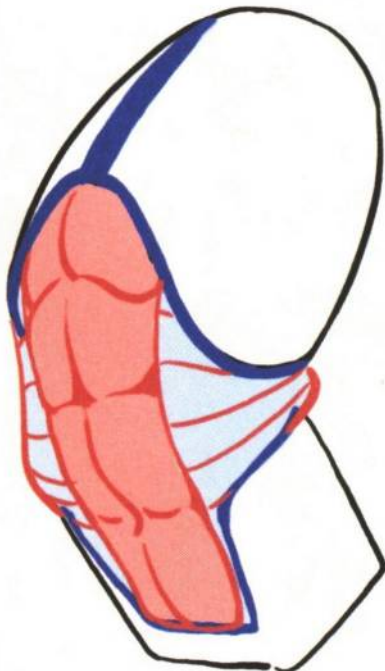
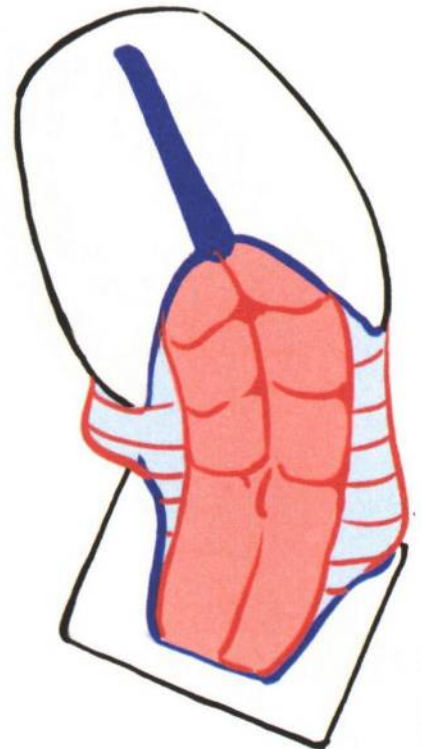
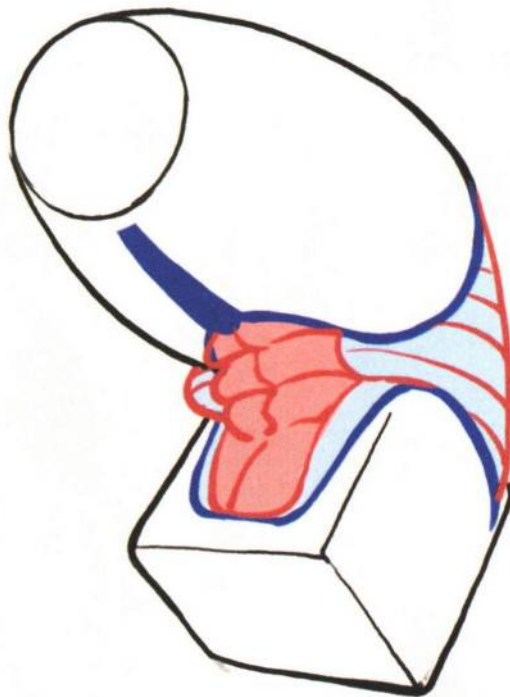
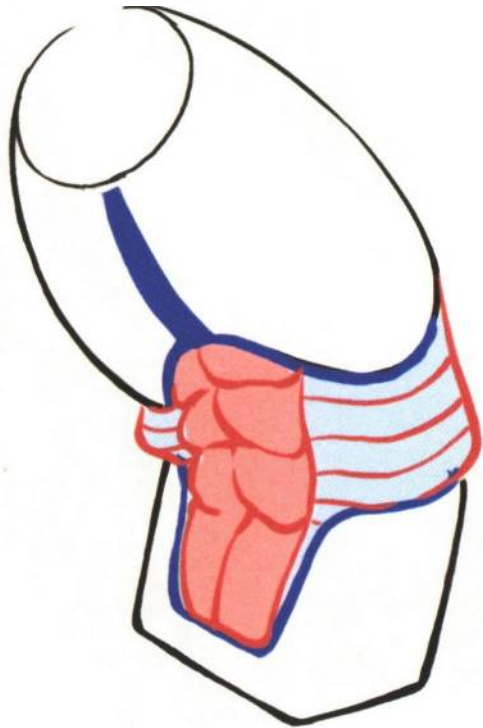
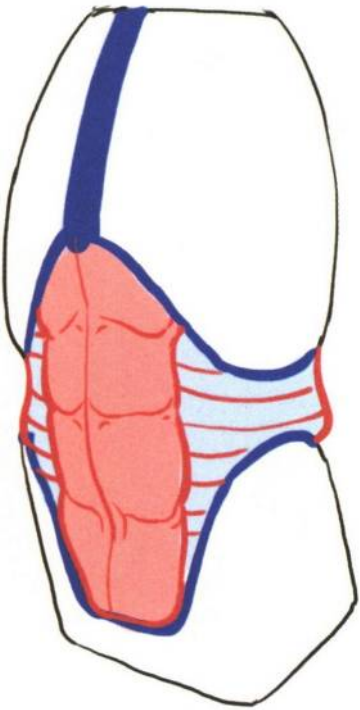
The length of the human spine does not change when it twists; at most, it scales in perspective. The front part of the neck and lower back is made up of muscles that stretch appropriately when twisted. While the length of the front side of the spine can be squeezed and pulled out of shape with twisting, the back side of the spine does not stretch the neck and waist with twisting.

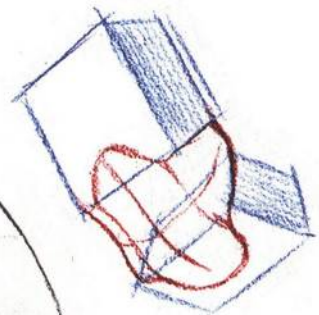
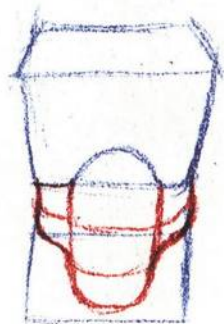
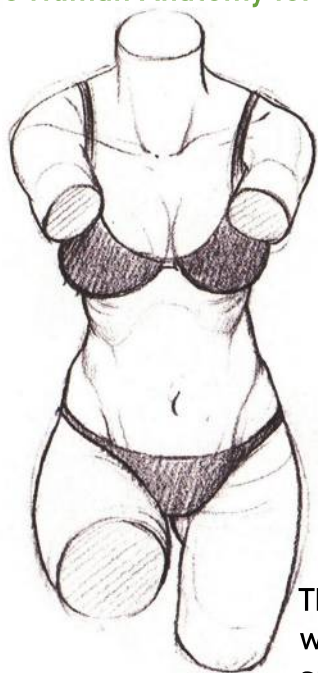


When we shape the waist, we put lines with arrows around the waist to represent the bones at the top of the pelvis, provided that the perspective of the tube is correct, and that the relationship between the two is correct, so that it will be easier to shape the twisted waist.

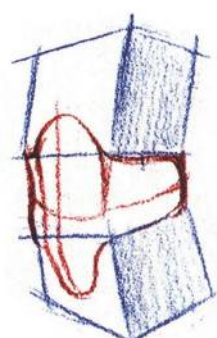
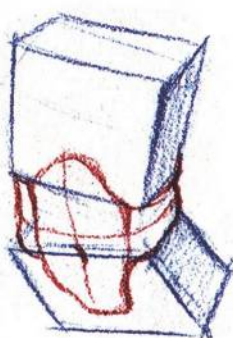
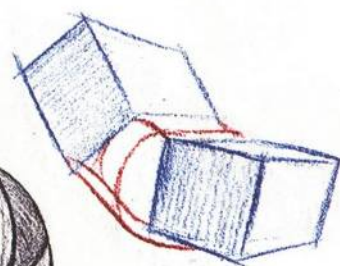
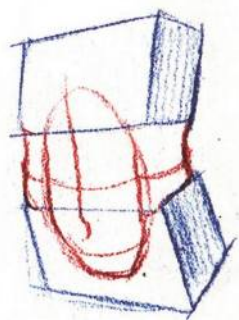


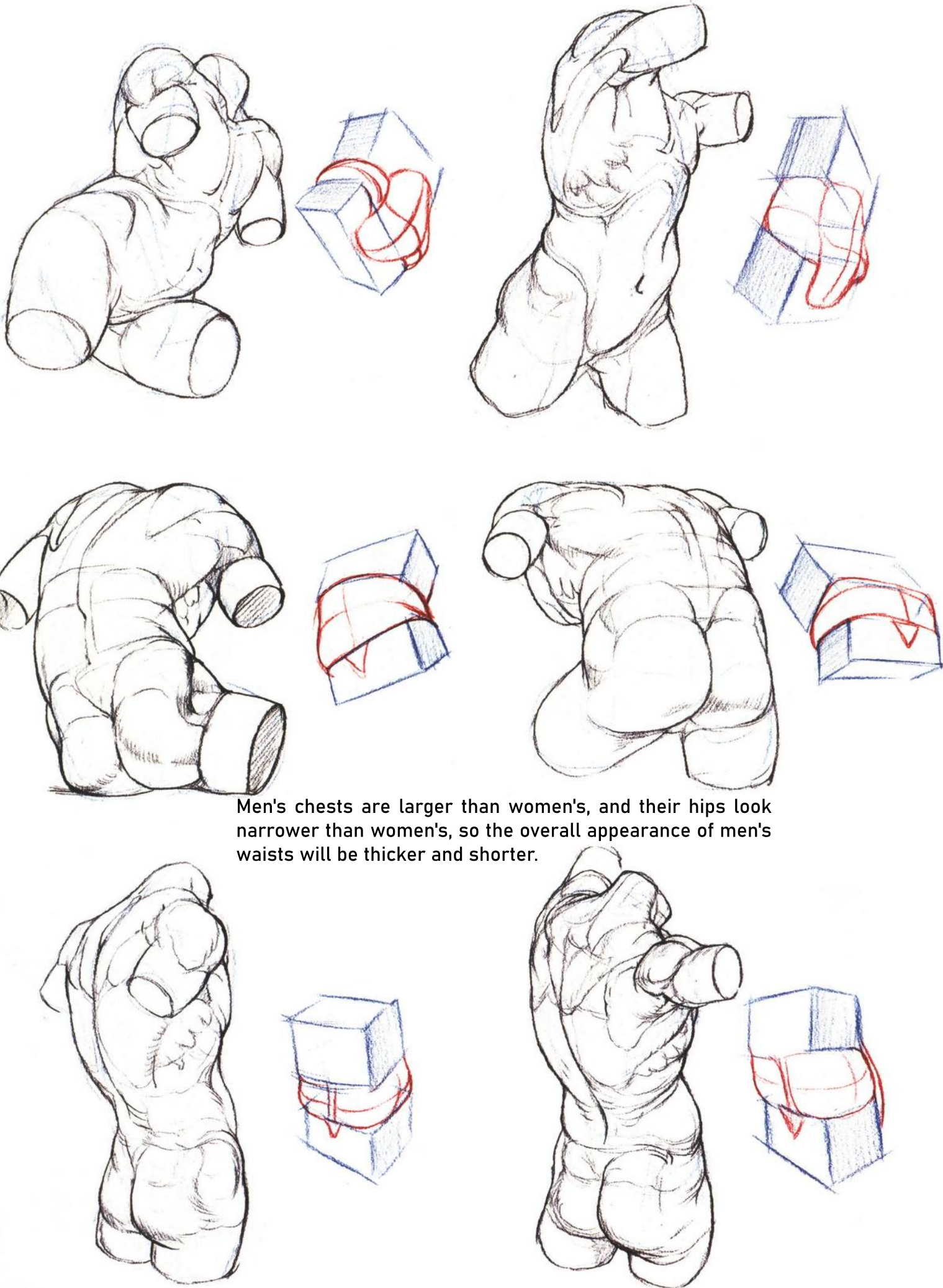
Usually when showing strong characters, we like to emphasize the eight-pack abs and draw them very hard, but it is not convenient to recognize the twisting waist. We can try to think of the abdominal muscles as a piece of soft rubber, when they are twisted or squeezed, they will be deformed, master the law of deformation, you can shape the waist more real and reasonable.





The waist is an important part of a woman's body. A woman's chest is smaller than a man's, and her hips are wider than a man's, so her waist will look longer than a man's.

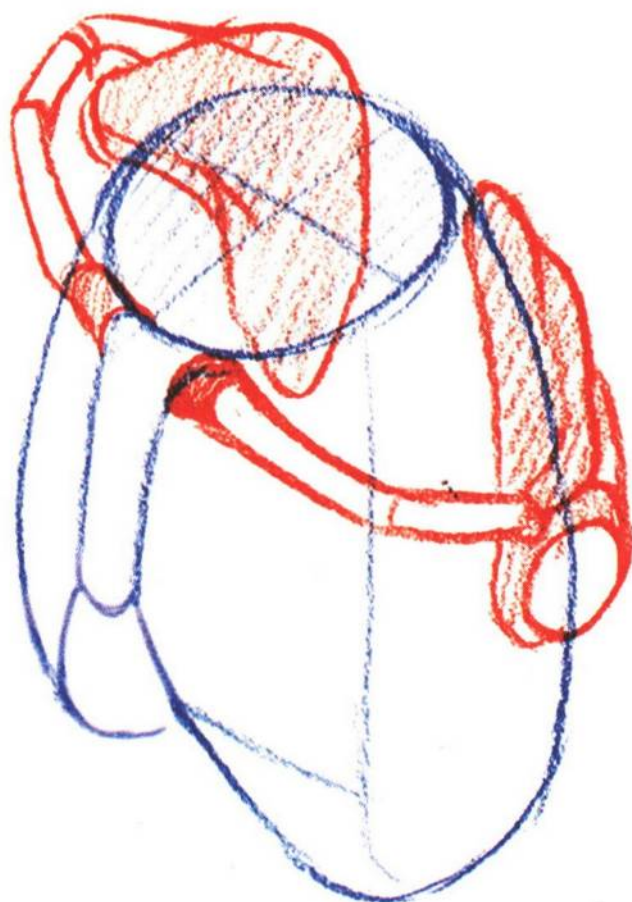
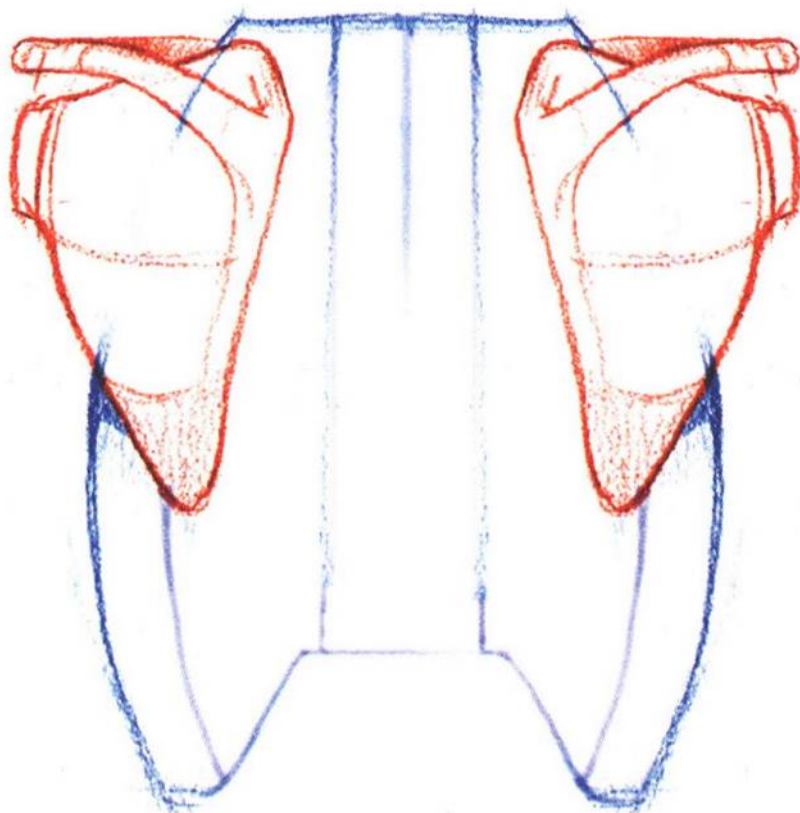
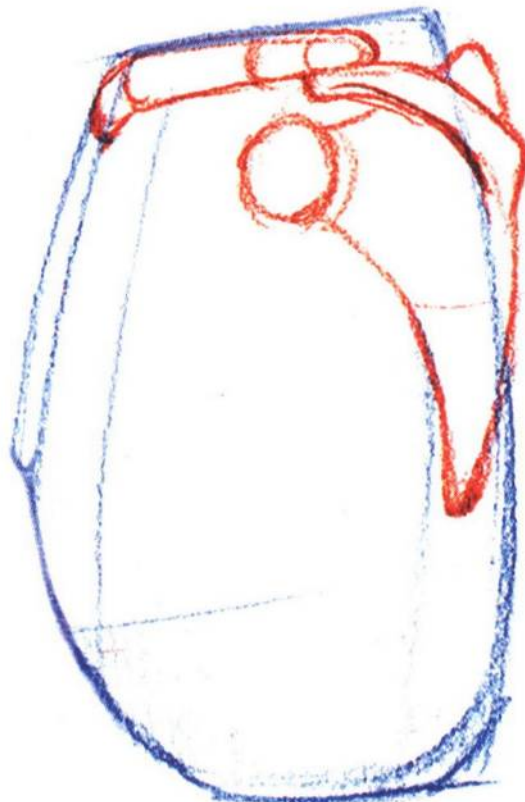
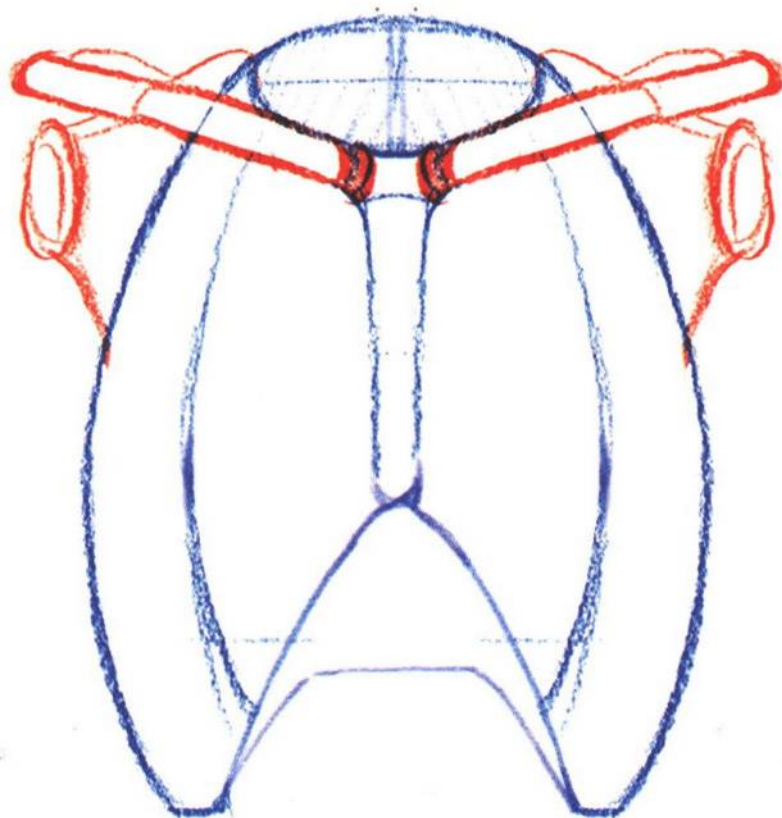


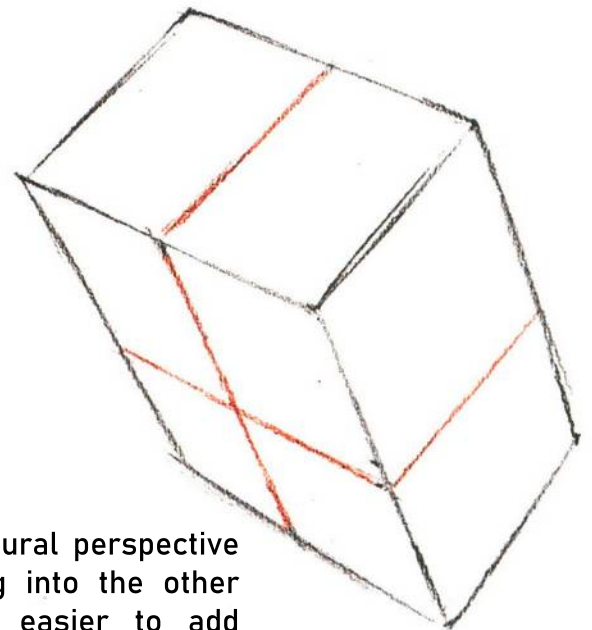
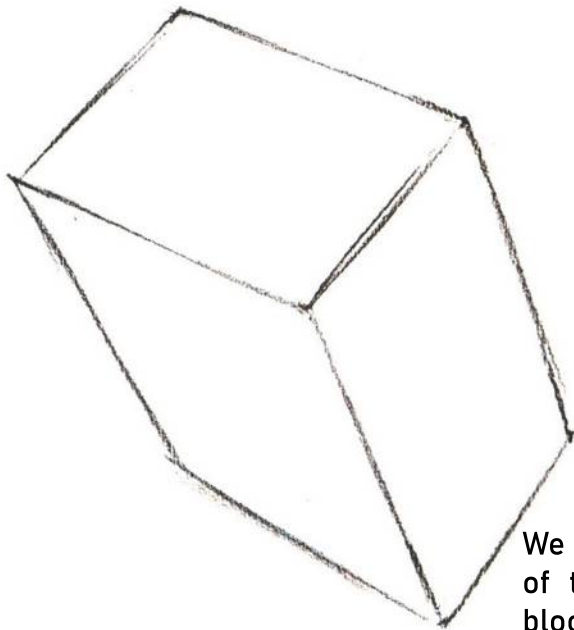


Men's chests are larger than women's, and their hips look narrower than women's, so the overall appearance of men's waists will be thicker and shorter.

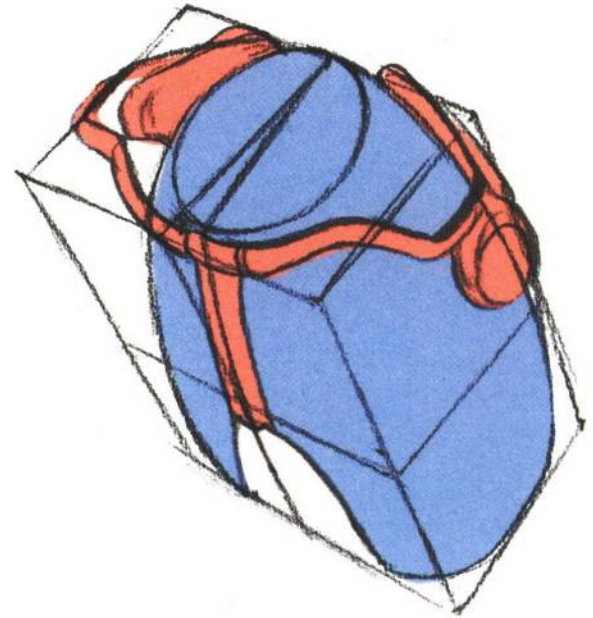
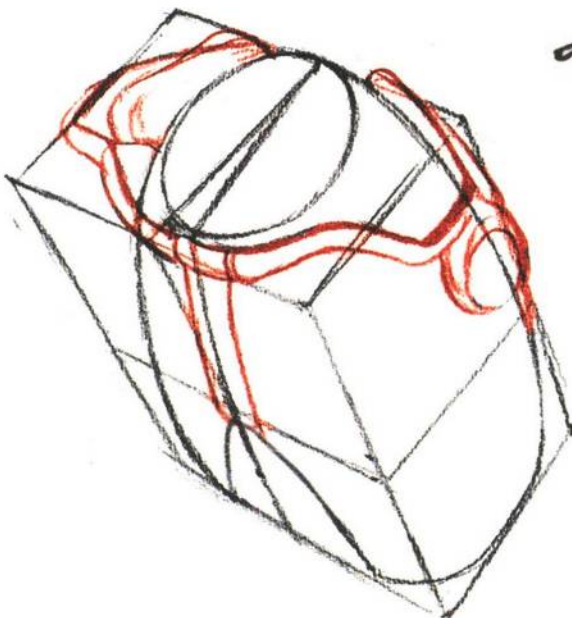
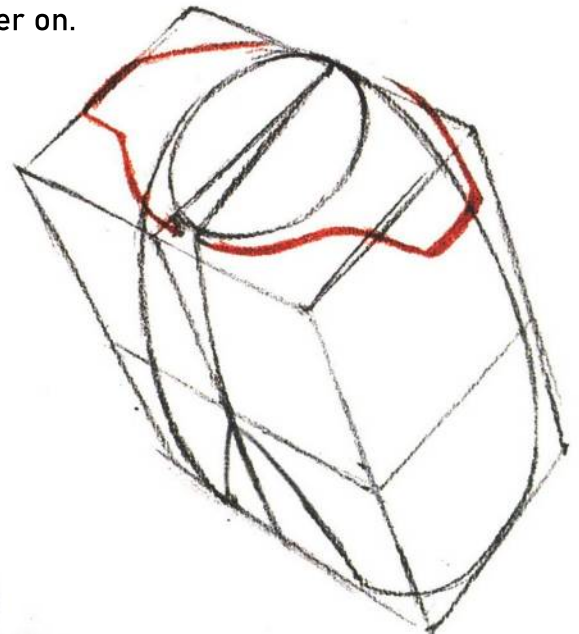
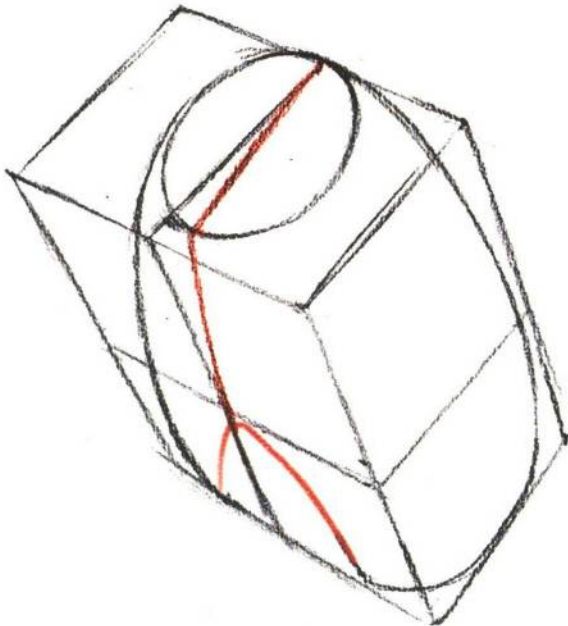
04 Structure of the thoracic cavity

The skeleton of the human thoracic cavity can be divided into a region of relative rest and a region of relative motion, and the entire thoracic cavity can be viewed as a structure consisting of a cylindrical body with two clamps.

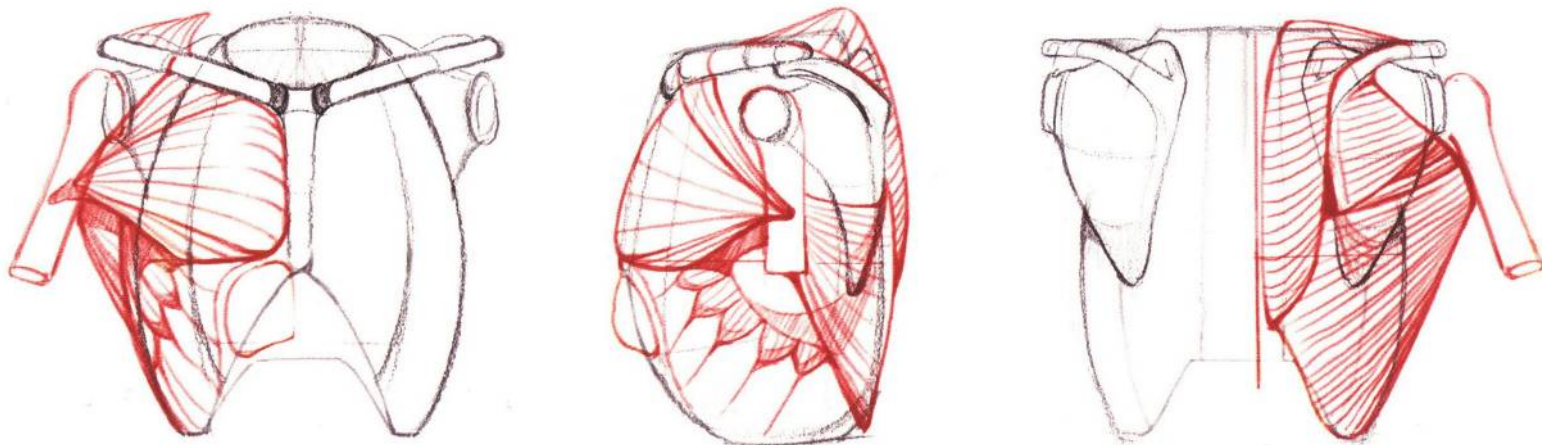




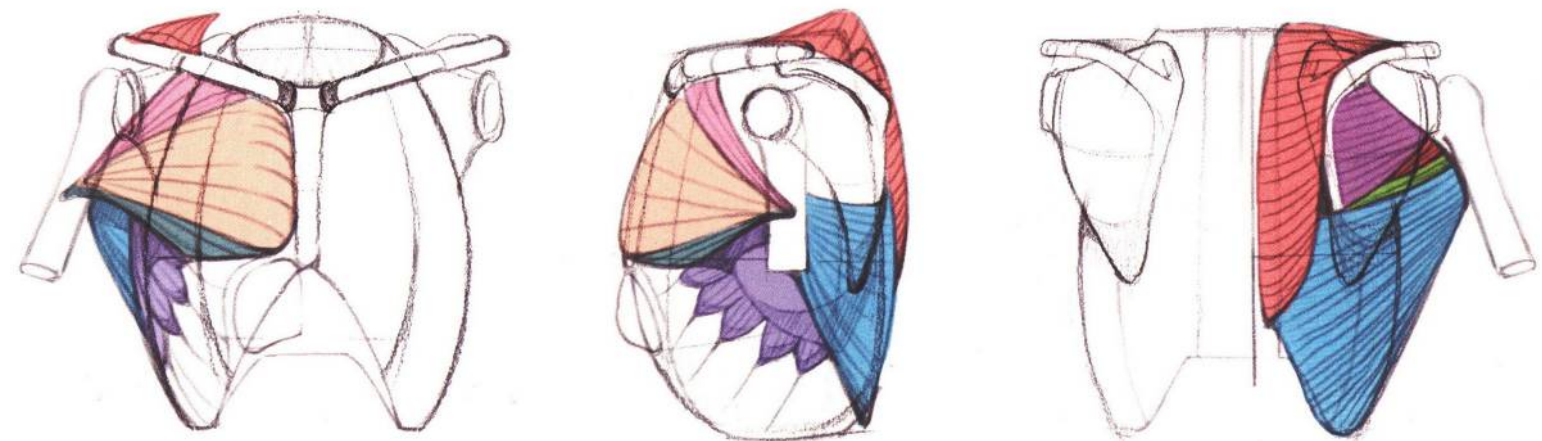
We can shape the structural perspective of the thorax by cutting into the other block, which makes it easier to add muscles to the torso later on.



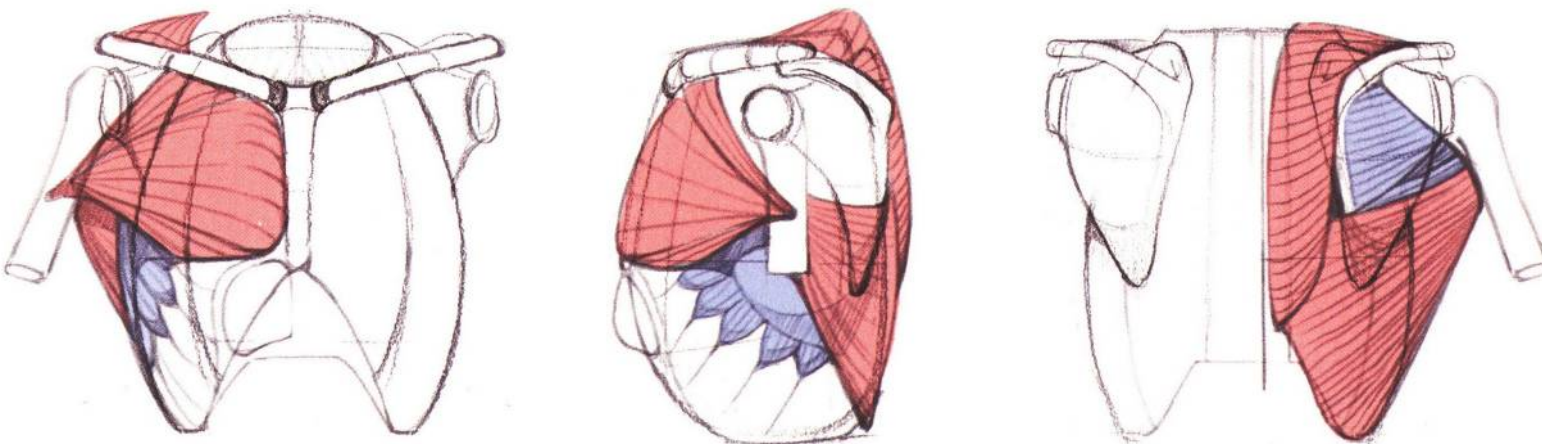
The chest cavity is surrounded by many small muscles, and it is time-consuming and laborious to check these muscles on an anatomical drawing.



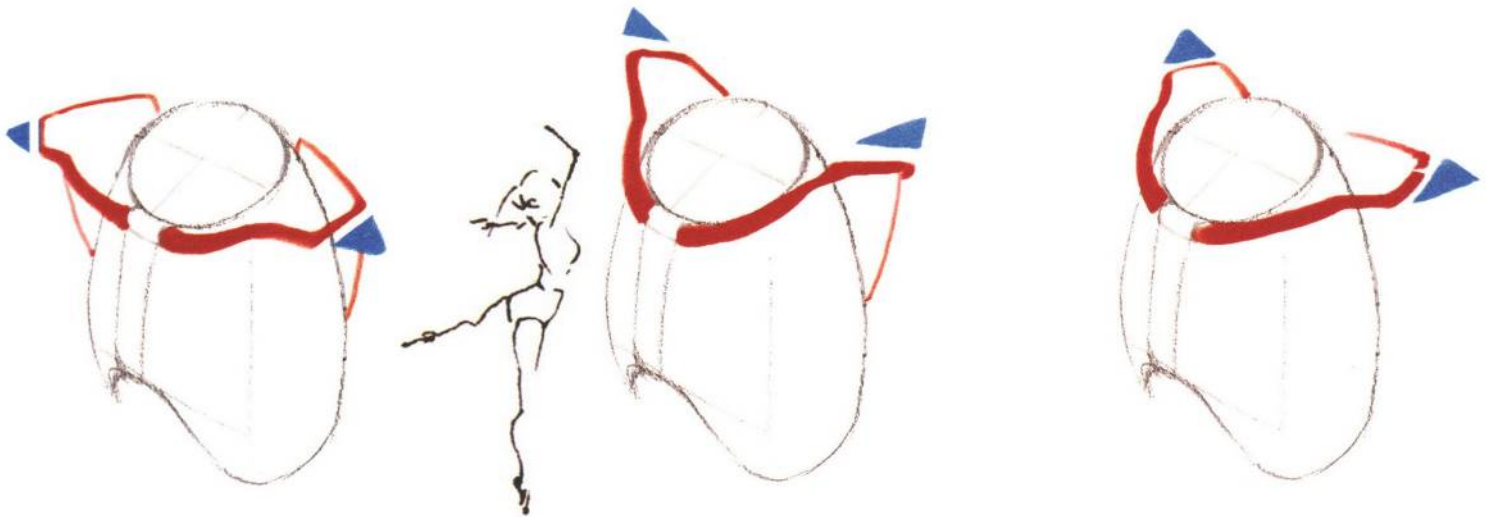
In order to make it easier to recognize the muscles in the chest cavity, we can divide the area where the muscles are located into colors, which will also help us to draw the movement state of different muscles when we shape the local muscles later on.



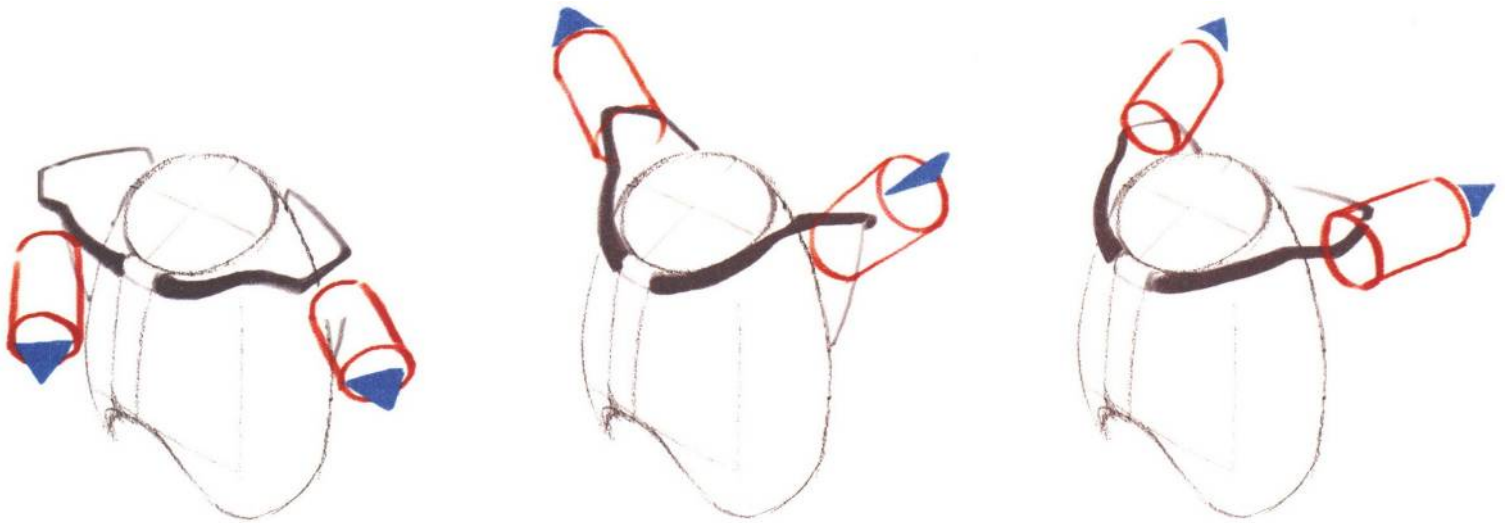
The muscles of the chest can be categorized into relatively moving muscles and relatively stationary muscles according to their movement status, the relatively moving muscles mainly include the pectoralis major, rhomboids and latissimus dorsi, while the relatively stationary muscles refer to the serratus anterior muscle. The muscles of the thoracic cavity can be summarized into these four muscle groups, so that it will not be complicated to draw their states of motion.



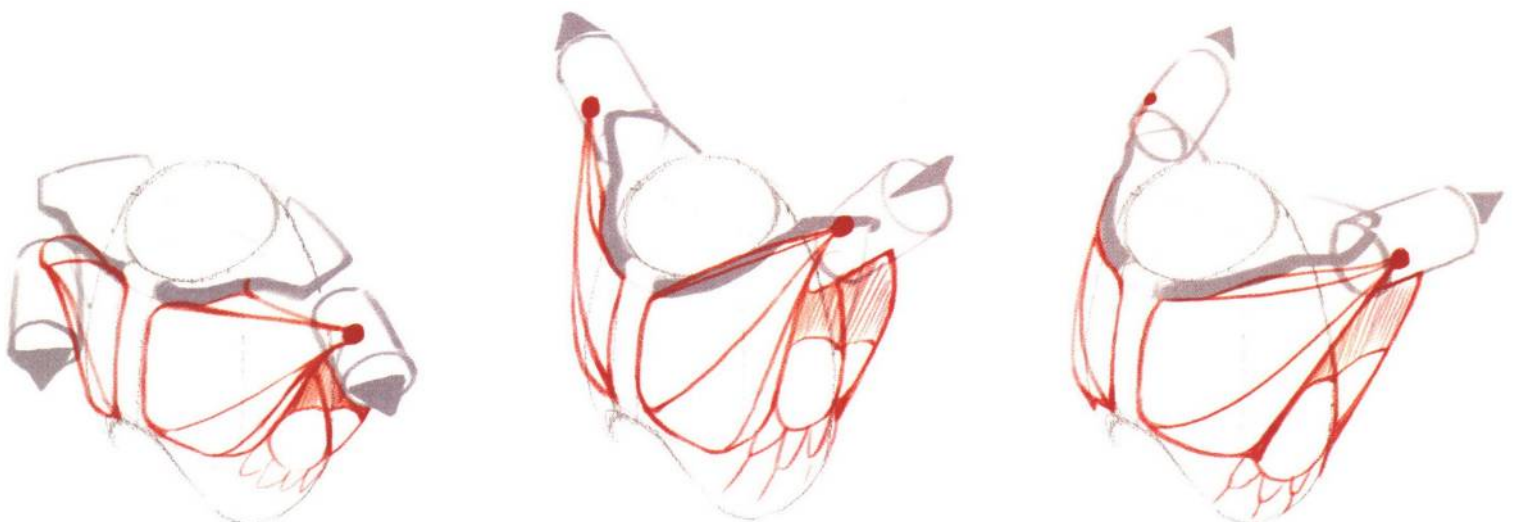
Performance of the clavicle and scapula movement is the most difficult part of the chest, because the chest muscle groups will be due to arm movement and extrusion or pull, and arm movement mainly affects the clavicle and scapula, we can see the clavicle and scapula as a clip, the first clip the movement of the perspective to show clearly.



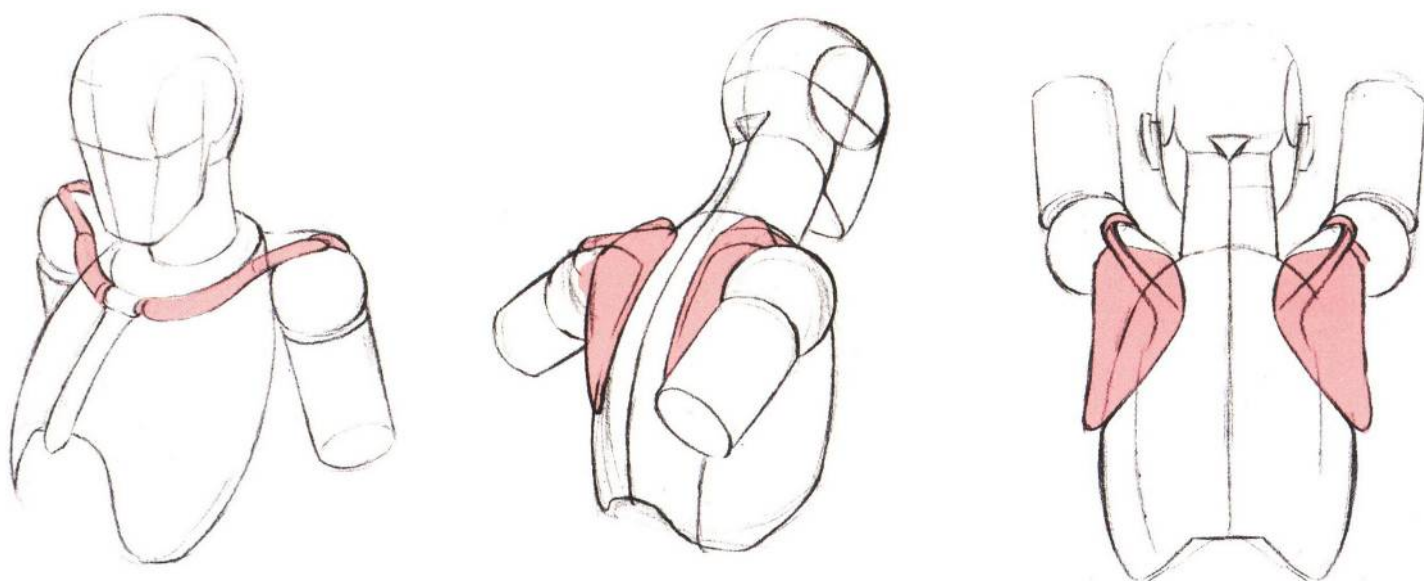
To show the perspective of the arm, you can represent the arm of the cylinder in the clip movement on the basis of perspective adjustment, so that the arm of the movement will be more vivid.



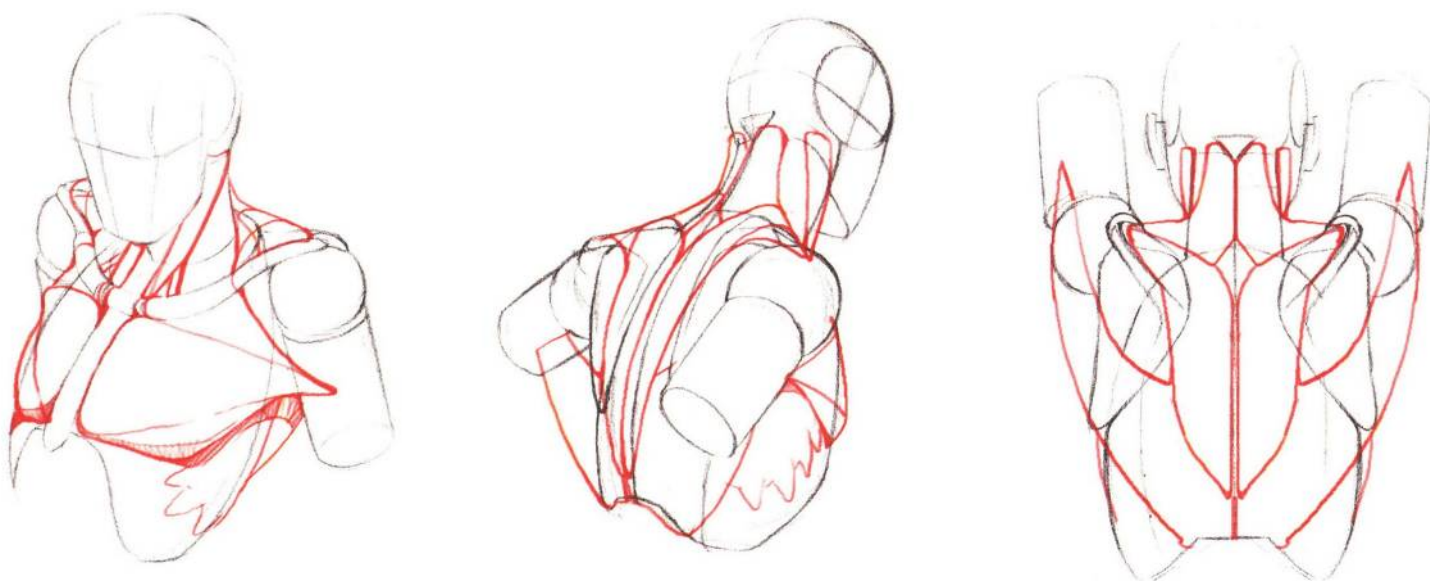
After showing the movement of the thoracic stent, and then carve out the muscle pulling and squeezing relationship, you can draw a vivid and natural thorax.



Next show the steps for drawing the torso. First, the basic structure of the head, neck, chest, and arms of the character is clearly indicated.

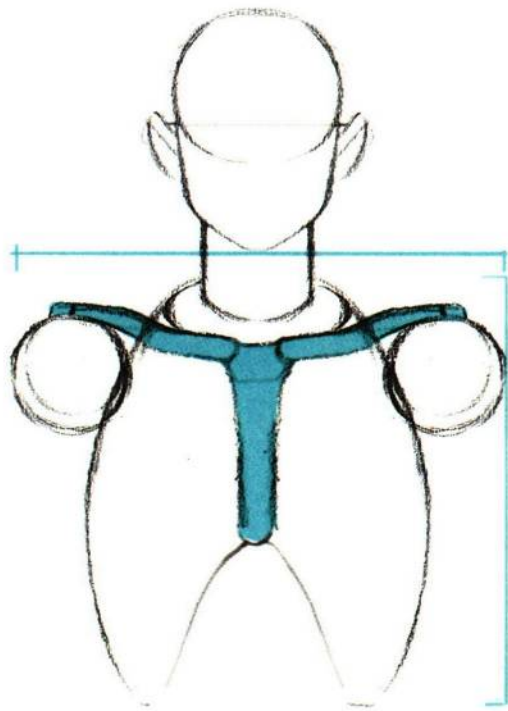


Find the corresponding connection points of the muscles and bones and connect them, so that the perspective of the human body and the muscle interspersed appear more realistic.

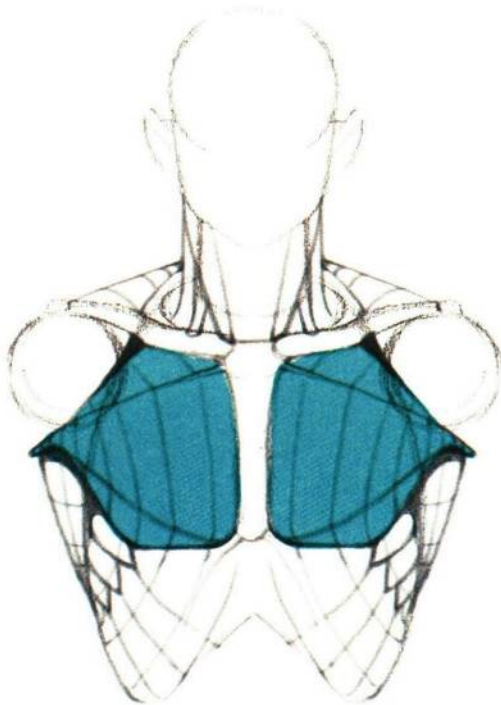
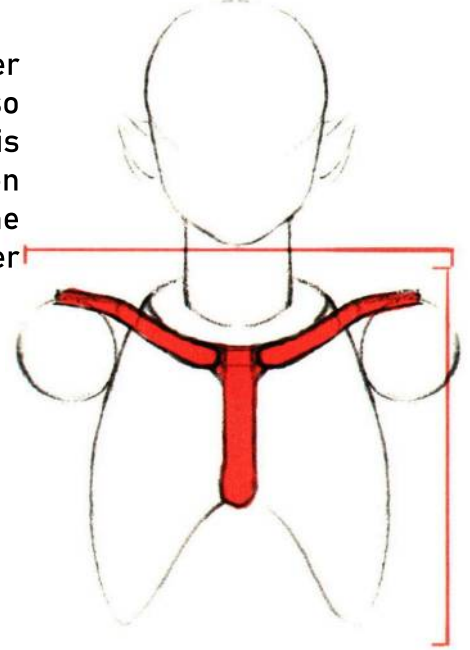


Fill in the color on the basis of the sketch, and then you can see that the muscle groups on the torso are not so complicated.

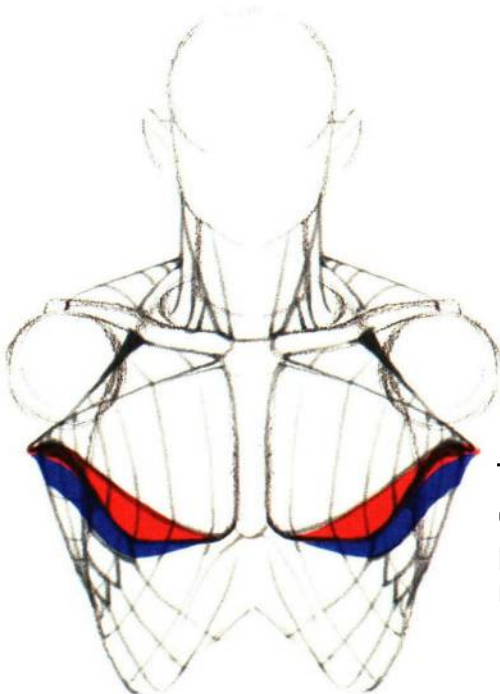
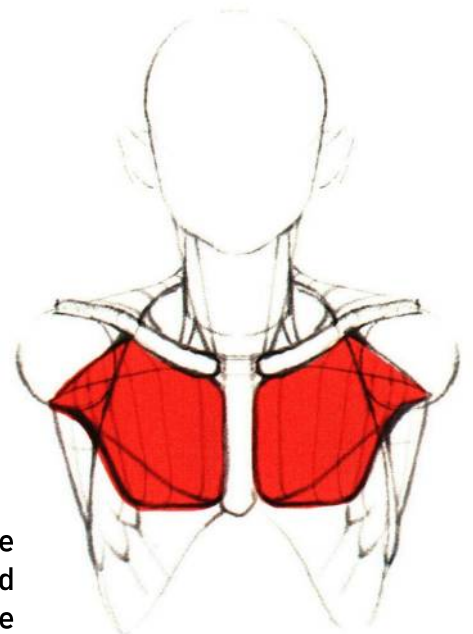




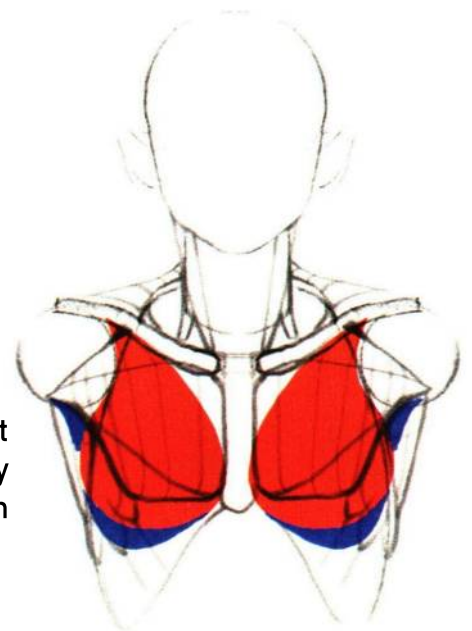
The chest cavity of men is wider and longer than that of women, so we should consciously make this kind of proportion adjustment when drawing the chest cavity, so that the upper body of men will be stronger than that of women.



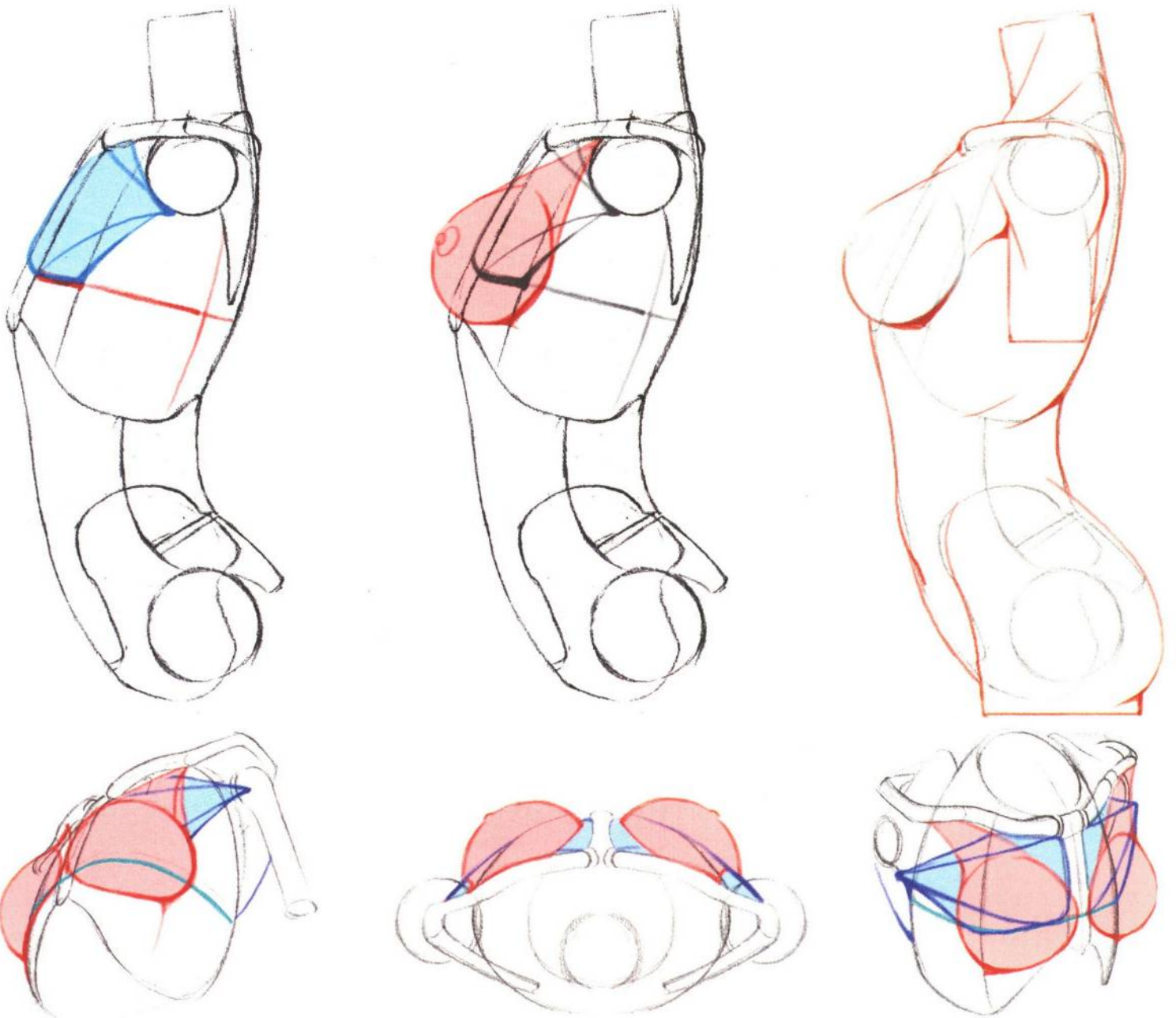
The pectoral muscles of men are larger than those of women, and this is due to the difference in bone size.



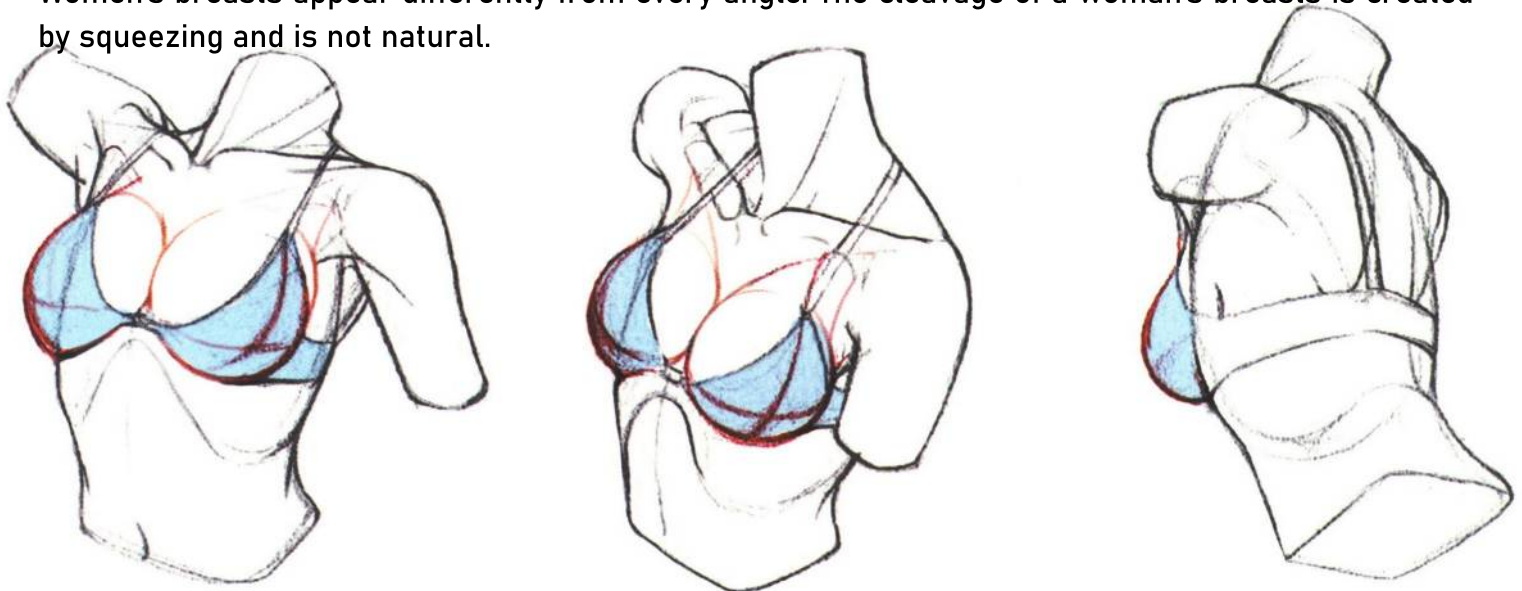
The male chest has less fat distribution, which is one of the key points of differentiation between men and women.



When drawing a woman's breasts, you can create a natural female breast by first identifying the muscles, then imagining a balloon filled with water hanging over the chest, and then tracing the contours of the balloon according to the force it is subjected to.

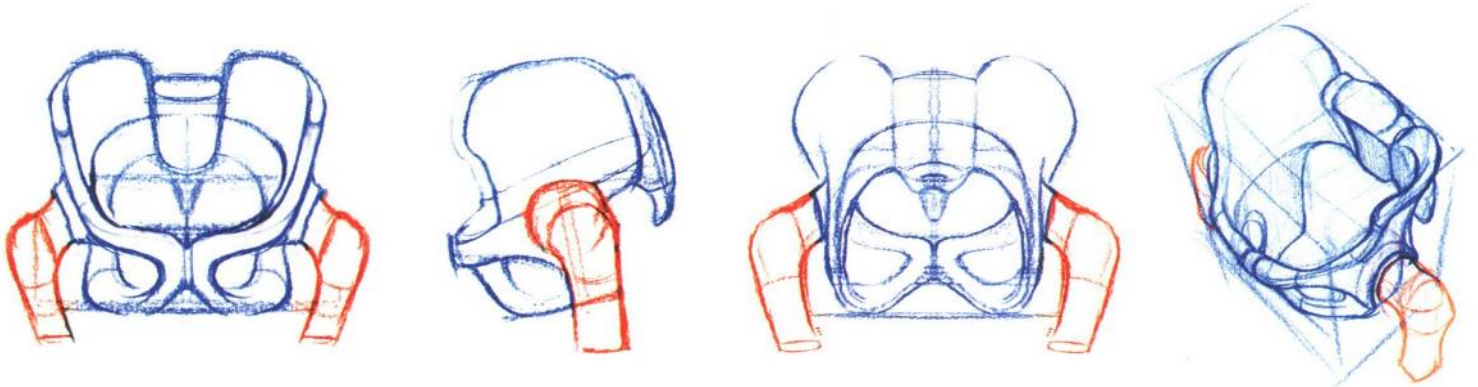


Women's breasts appear differently from every angle. The cleavage of a woman's breasts is created by squeezing and is not natural.

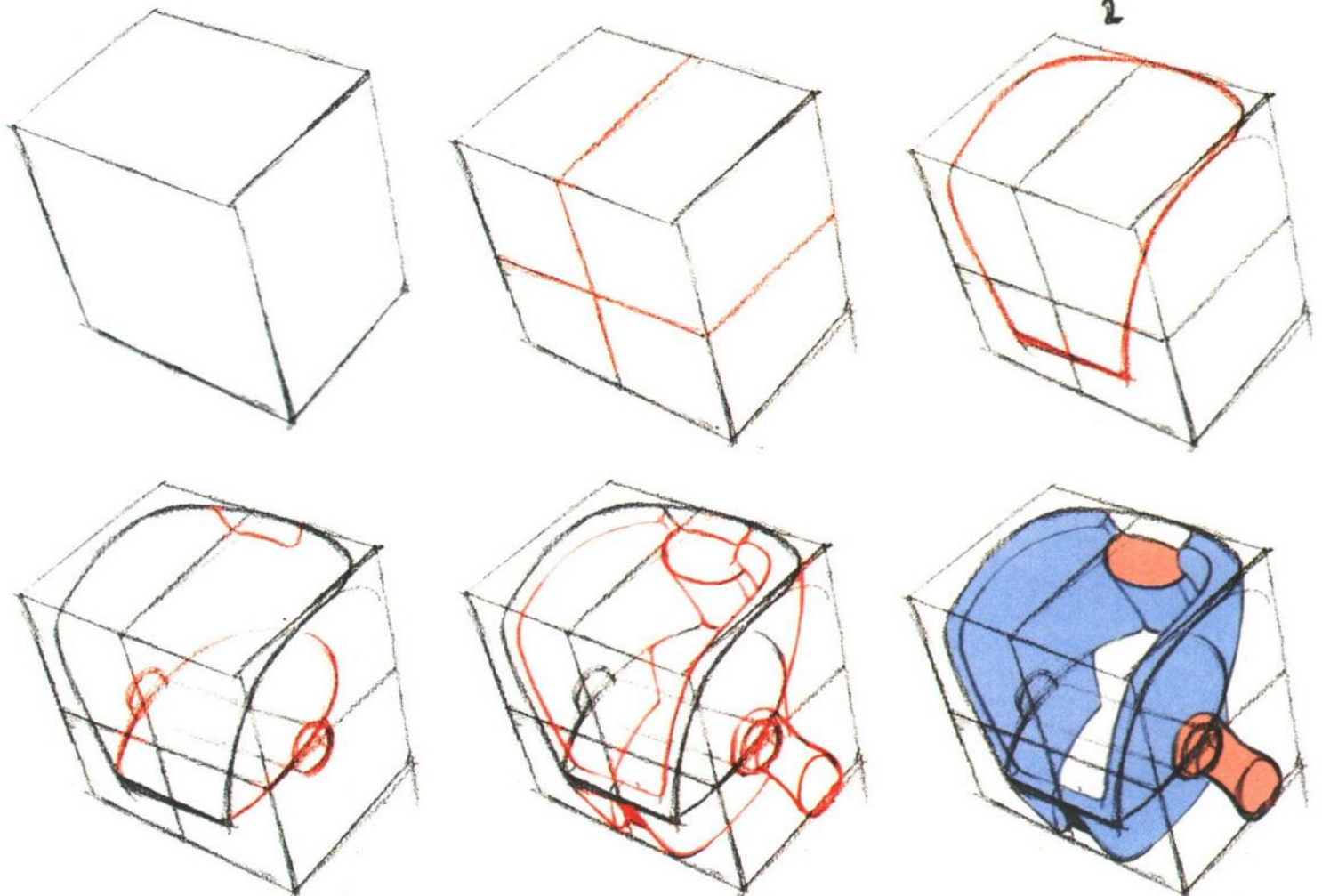


05 The structure of the hips

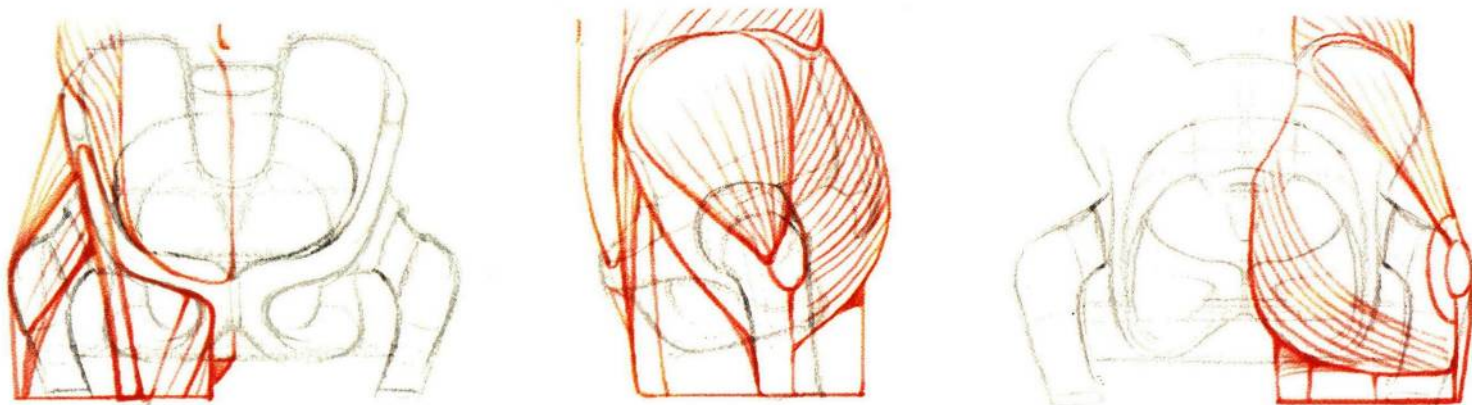
The skeletal structure of the human pelvis is complex, and a good drawing of the pelvis is the key to a good drawing of the lower half of the body. The pelvis is similar to a basin in a cube, so when you draw it, you need to focus on the three-dimensional perspective of the pelvis and the left-right perspective of the greater trochanter (which is located on top of the pelvis), which is the key to correctly drawing the movement pattern of the lower body.



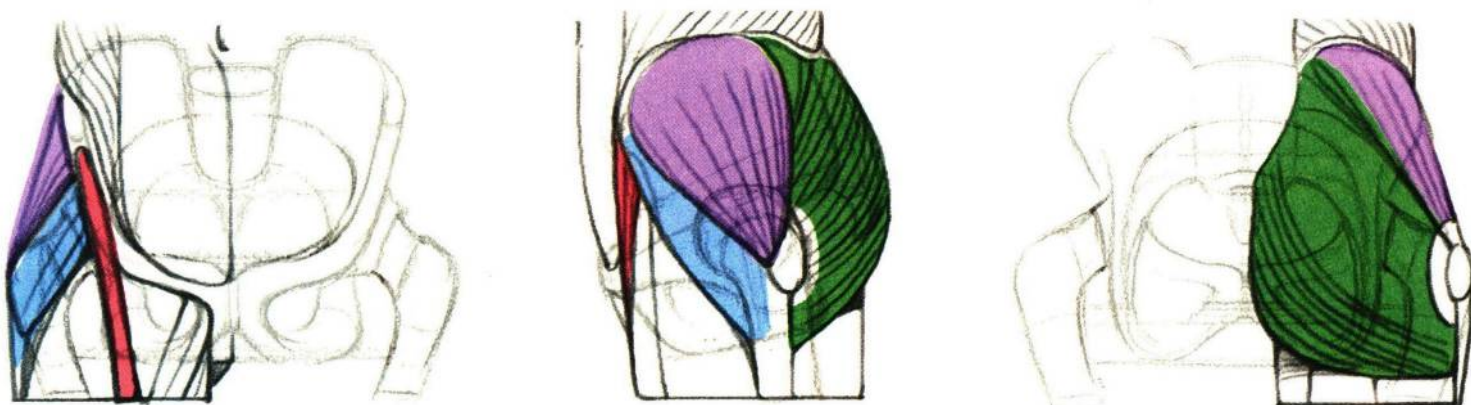
The following picture shows the steps of slowly drawing the pelvis in a square. As you can see from the picture, you need to find the right perspective for drawing the pelvis, and then slowly find the corresponding reference points to shape the pelvis based on the correct perspective, so that you can draw the three-dimensional state of the pelvis more easily.



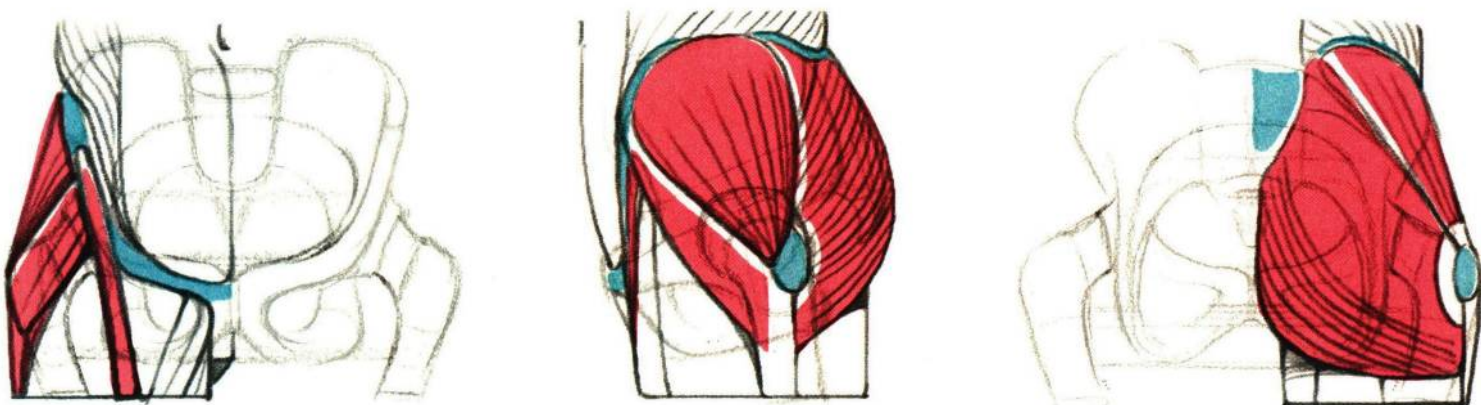
The muscles of the pelvis are intricate and complex, and we can color-compartmentalize these muscles, which will be very helpful in grasping the local musculature of the pelvis.



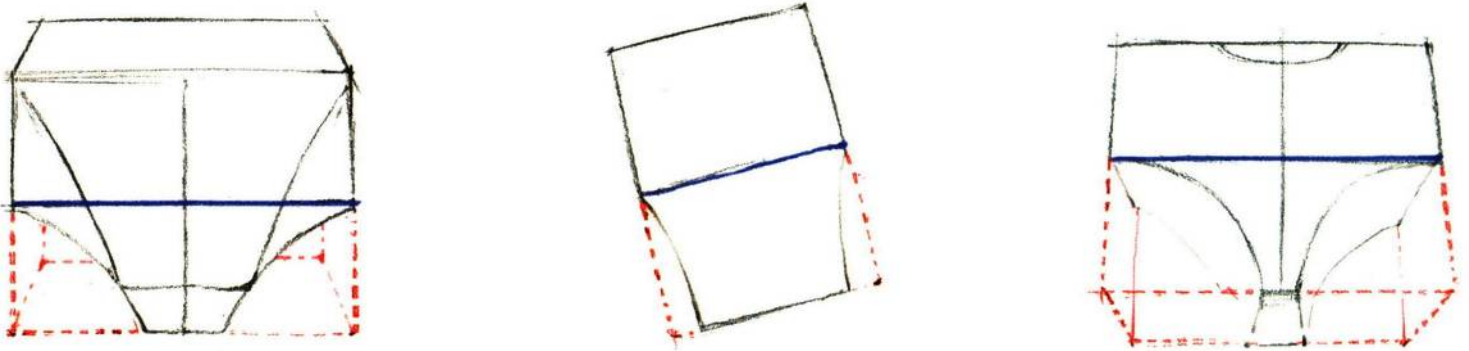
The pelvic muscles form four large muscle groups on the lateral aspect of the pelvis: the vastus tensor fasciae, gluteus medius, gluteus maximus, and the suture muscles. There are many other muscles on the side of the pelvis that will not be repeated here.



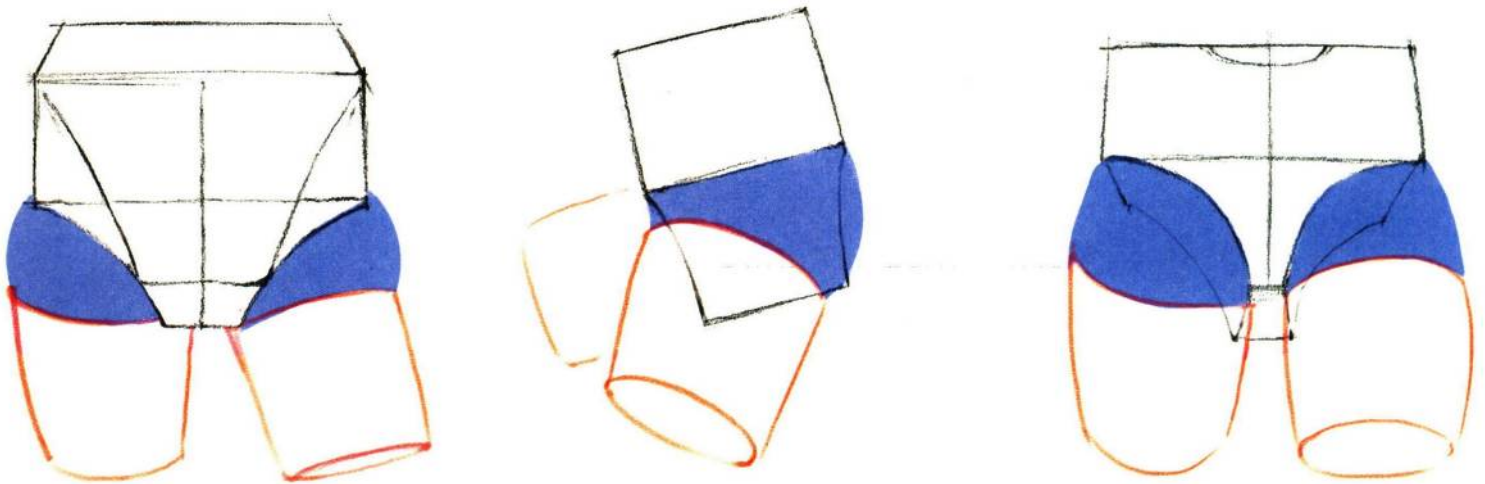
We have to pay attention to these muscle groups in the drawing of a part of the pelvis is exposed, can not make the muscle groups to cover the pelvis, so as to better reflect the figure of the waist of the shape of the aesthetic.



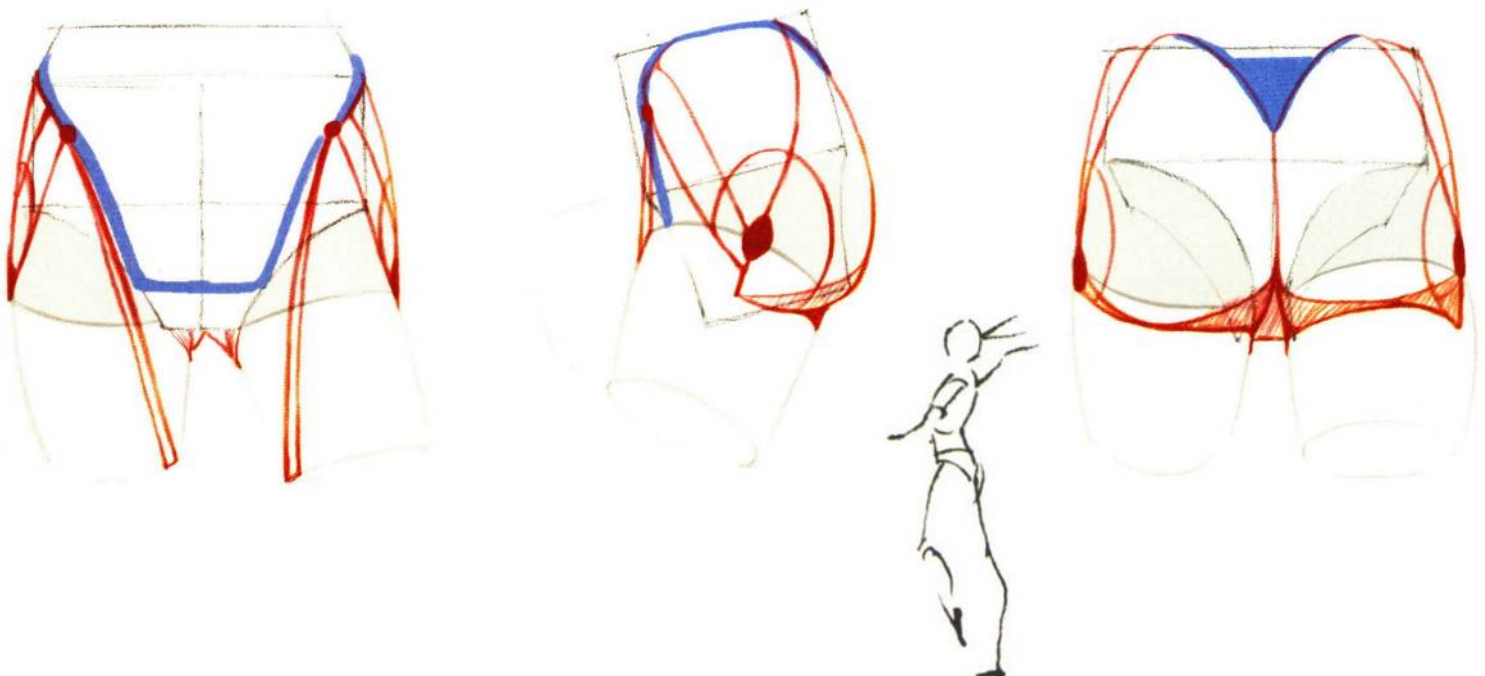
After understanding the muscle groups of the pelvis, we will also focus on the use of geometry in the pelvis. Imagine the pelvis as a cube and cut below one-half of the cube to create two arched areas.



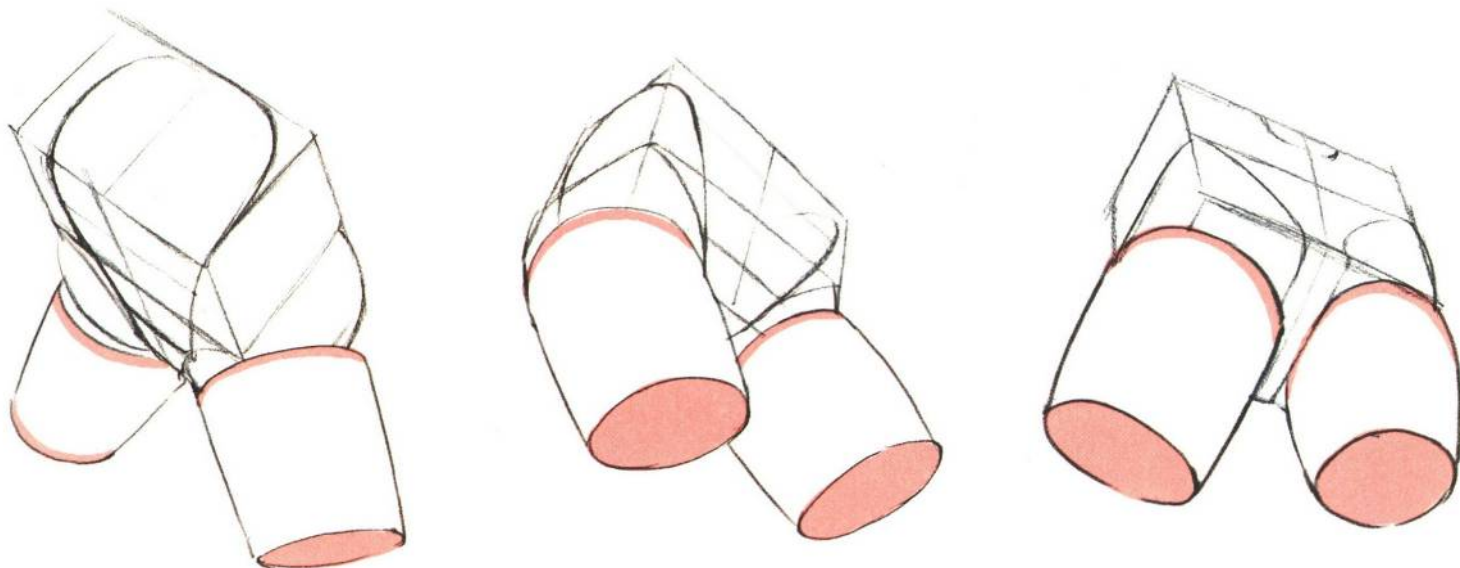
Fill in the arches with two rounded shapes, and then add the cylindrical perspective of the thighs to show the movement perspective of the thighs through the combination of shapes and cylinders.



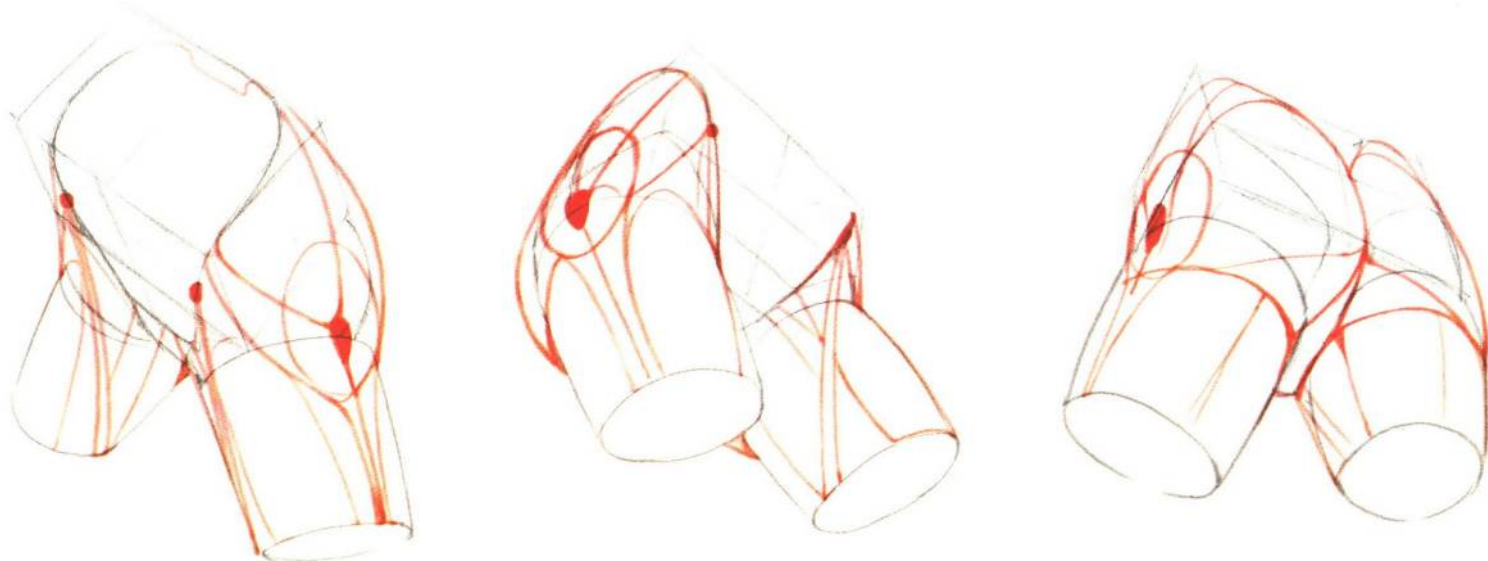
With a clearer movement perspective, add the muscle connection relationship, the muscles of the interspersed and extrusion of the sense of expression, so that the muscles drawn to appear more realistic.



The difficulty in drawing the crotch is to shape the arc of the thigh root, which will directly lead to the disproportion of the leg if it is not properly shaped.



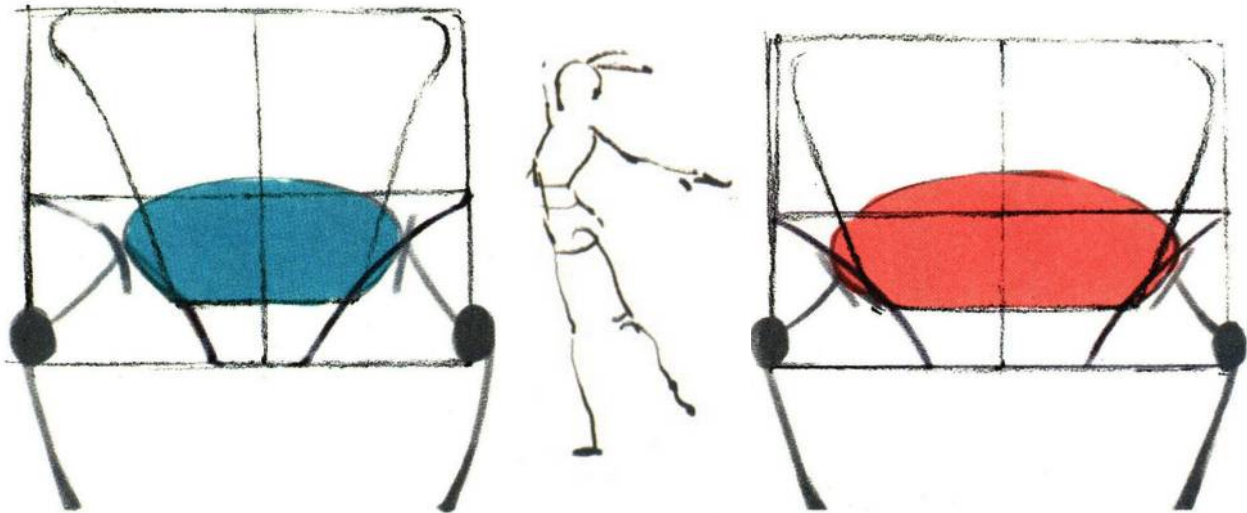
We will grasp the position of the greater trochanter in different perspectives, and use the connection between the greater trochanter and the pelvis as a reference to make point-to-point muscle connections, and draw the basic shape of the muscles.



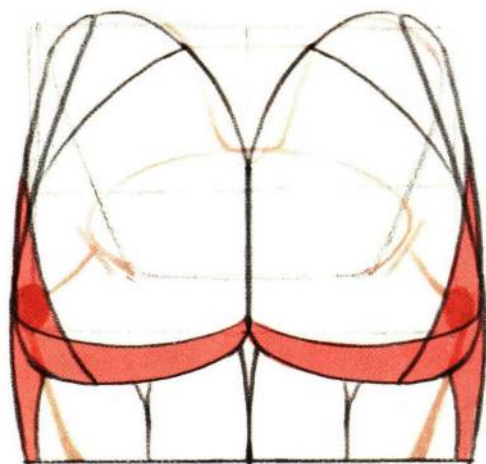
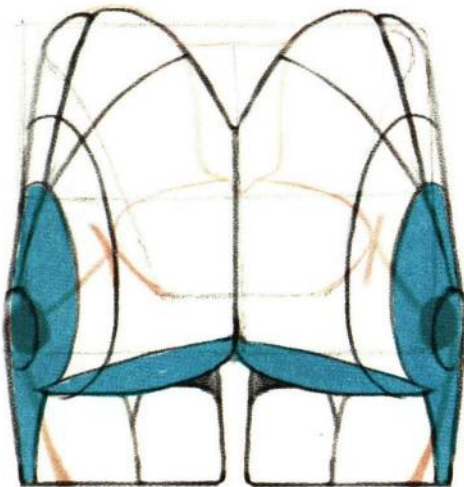
By making point-to-point connections in the cube, this exercise helps us to express the local muscle interspersion and form more accurately.



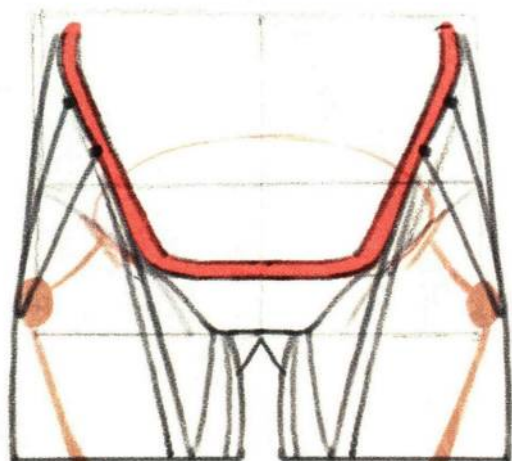
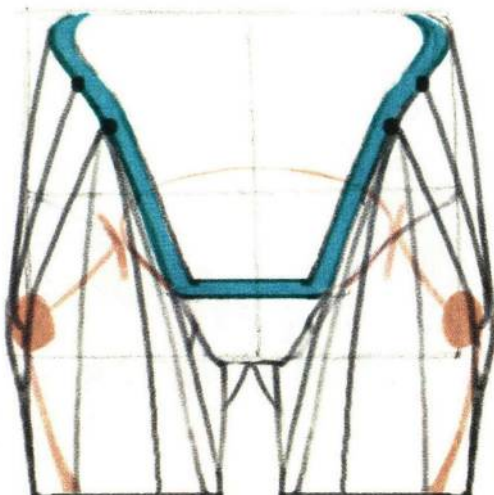
The biggest difference between the male and female pelvis is the structure of the pelvic floor, which is due to the different physiology of men and women: men do not have a uterus and are unable to give birth, so the pelvic floor is narrower, whereas women have the ability to nurture babies and need a wider passageway to give birth, so the pelvic floor is wider.



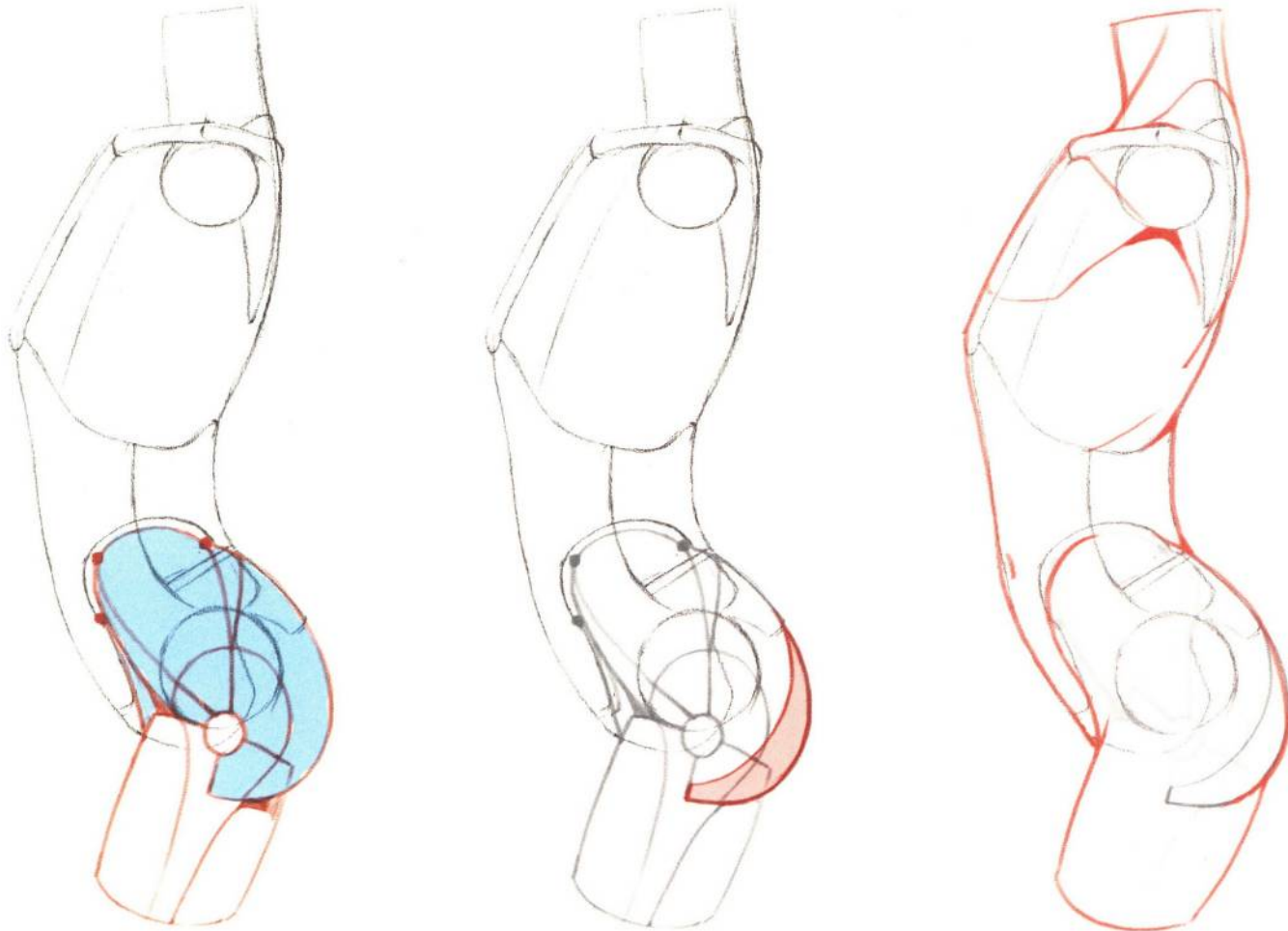
The exposed portion of the pelvic bones is also different between the male and female pelvis: the exposed portion of the pelvis is the area that is not covered by muscles, but only by skin, and is in the shape of a U. The male pelvis is longer and narrower than the female pelvis, and the female pelvis is more narrow. The male pelvis is longer and narrower, while the female is wider and flatter.



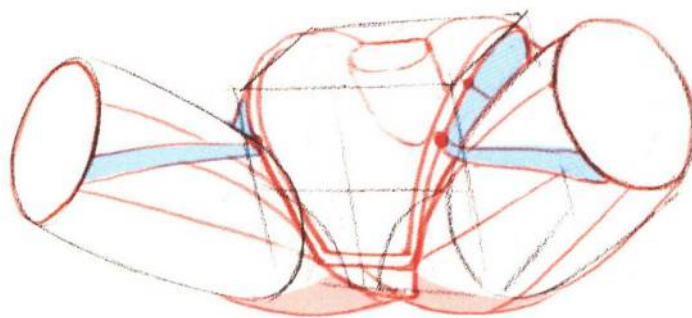
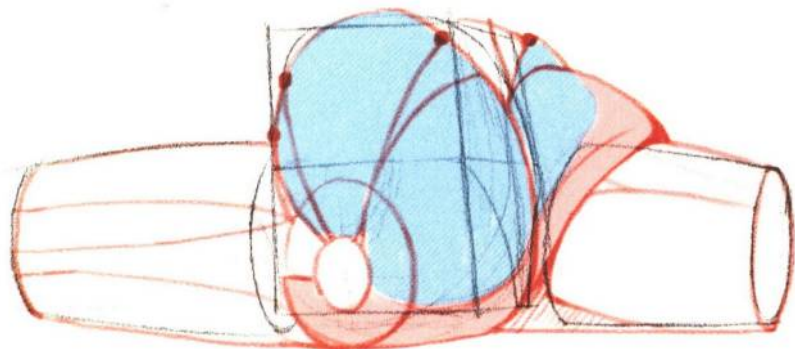
There are also some differences in the muscles: men's buttocks are lower in fat content and have a harder contour; women's buttocks are higher in fat content and have a rounder contour.



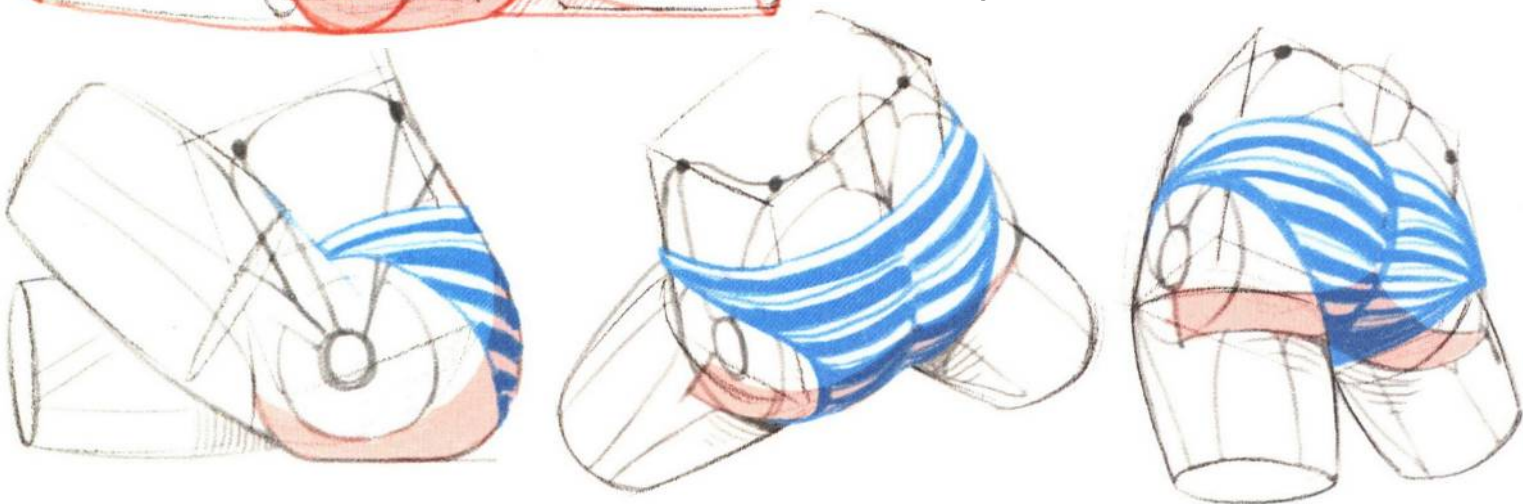
The focus of drawing the pelvis is to find the top of the pelvis and the location of the greater trochanter, and the main intersections to be shown when shaping the intersecting lines are also located in these two places.



When shaping the pelvis, you should also pay attention to the perspective of the square and cylinder to create a sense of muscle compression.



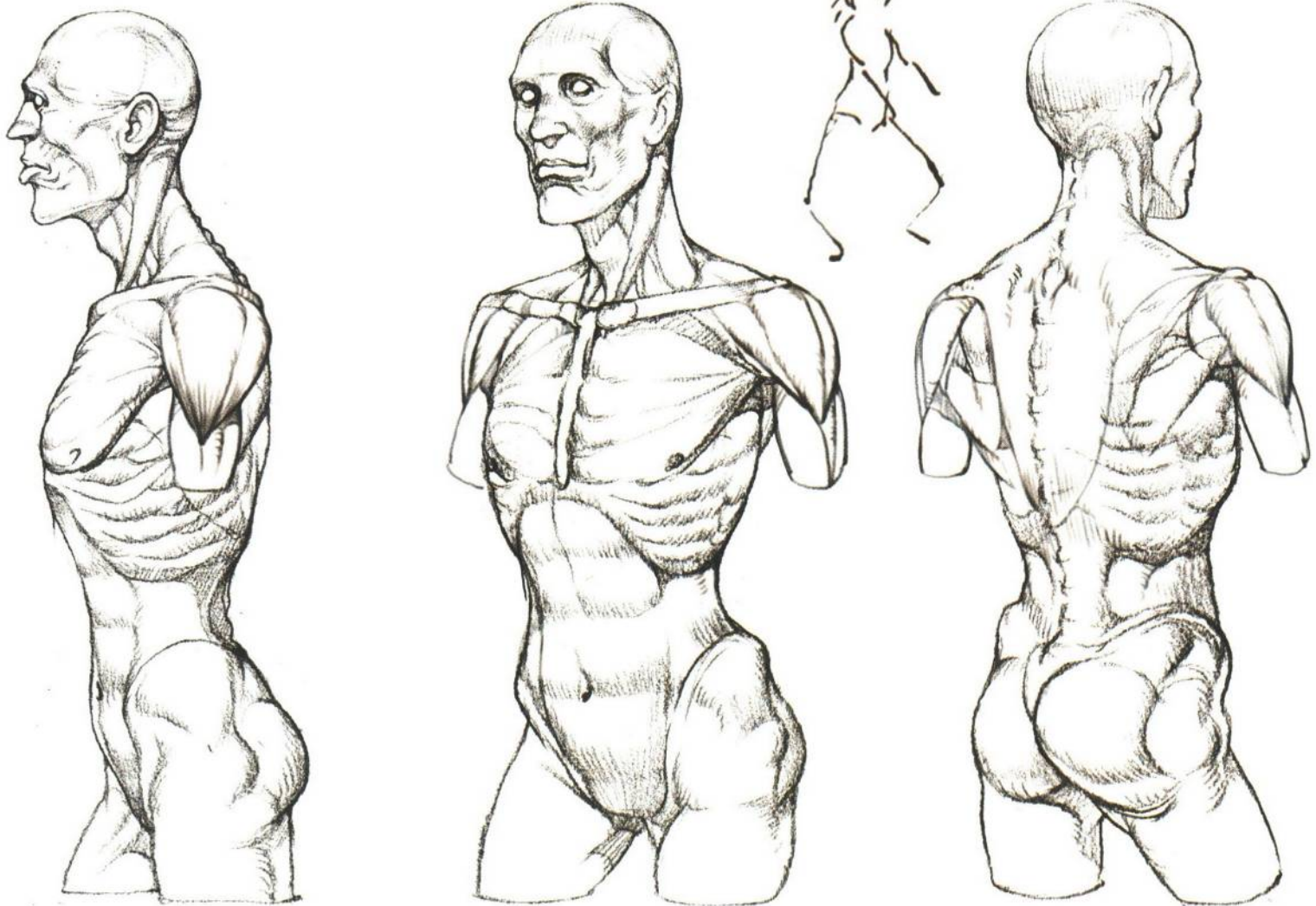
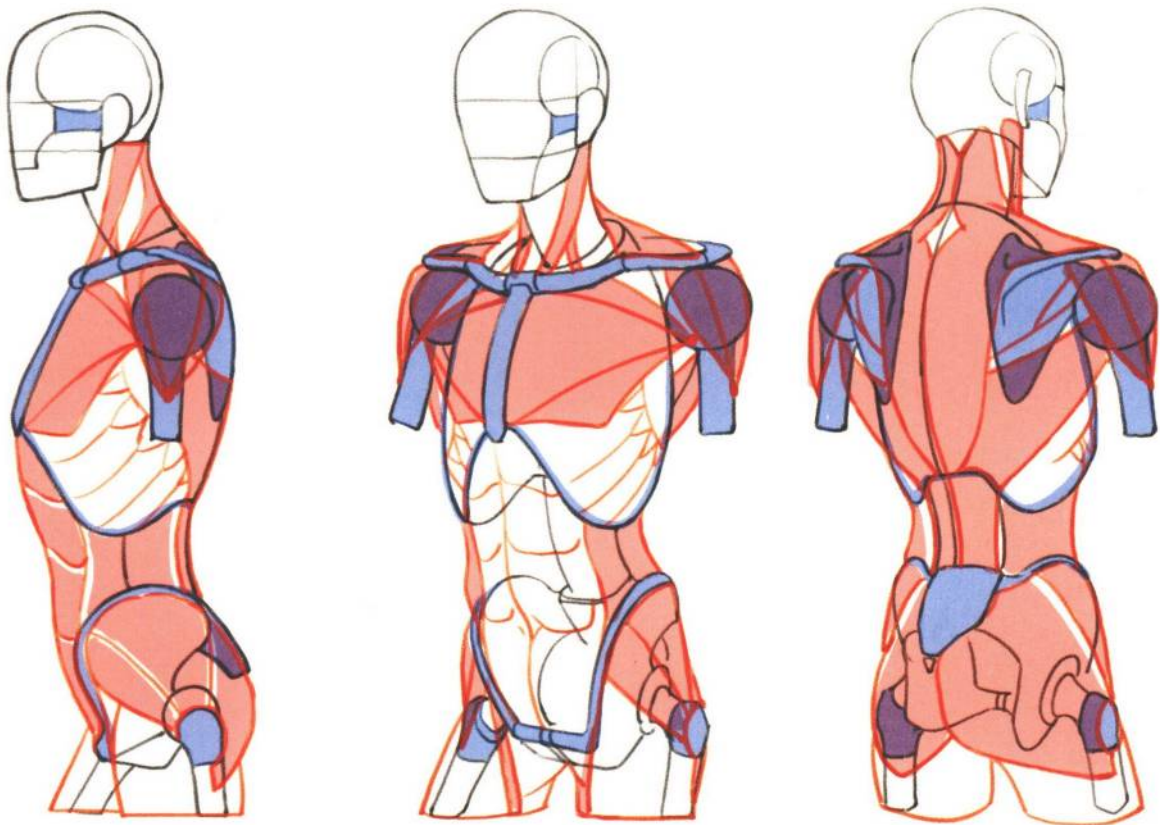
When drawing the buttocks, the lines of the buttocks should be drawn according to our knowledge of form.

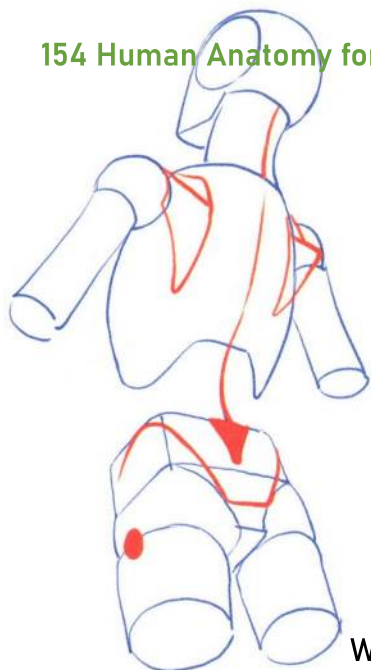


06 Comparison of the torsos of a fat person and a thin person

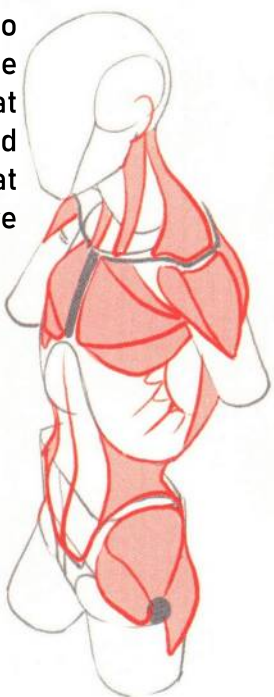
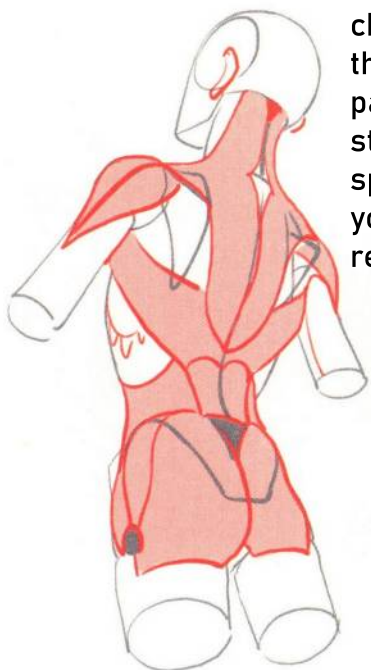
There are both fat and thin people, but when the body shape of the same person changes, the size of the bones will not change, but the muscles on the bones will change.

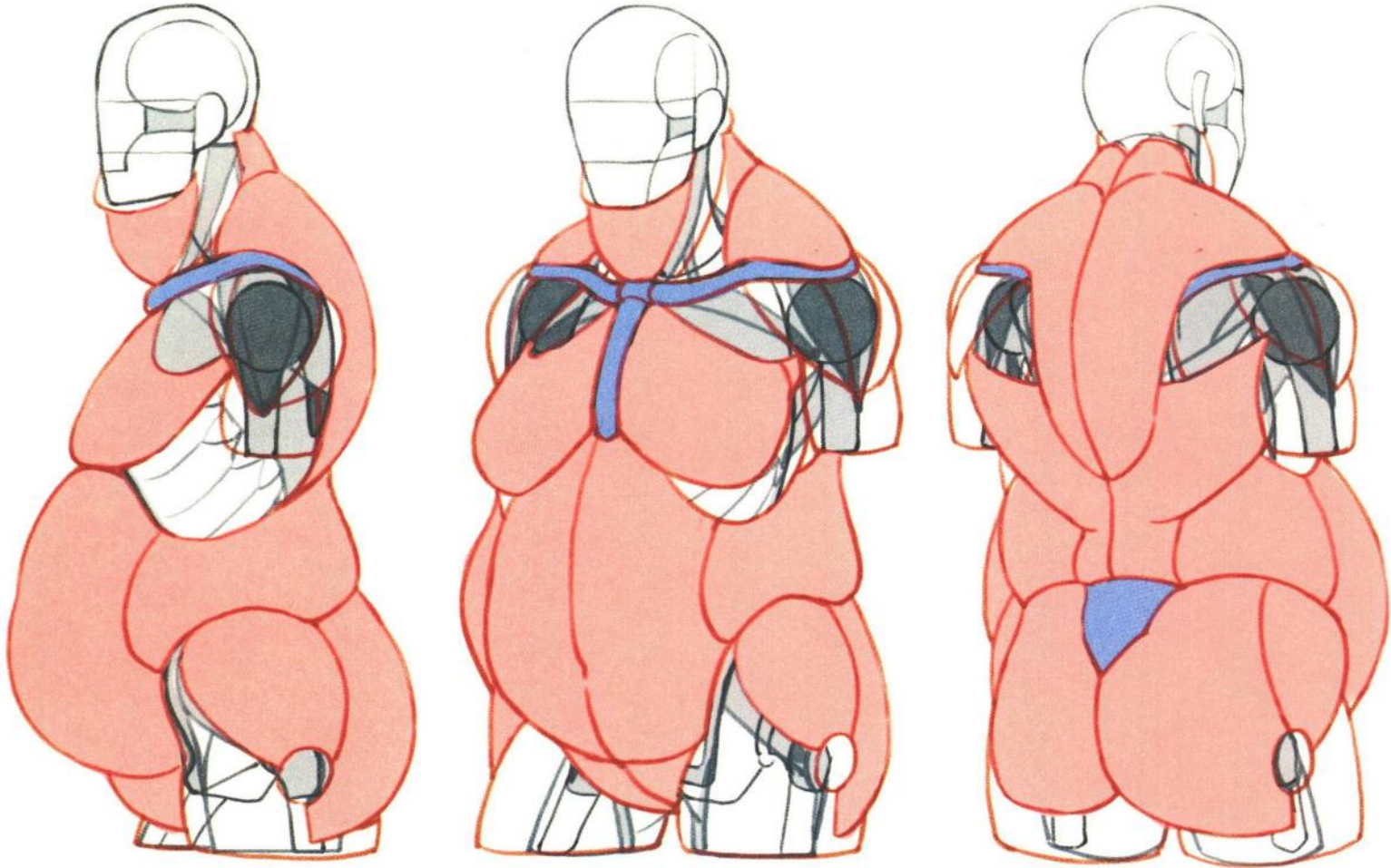
When you draw a thin person, you should draw some thin muscle groups on the bones, and try to draw the basic structure of the bones at some bone points, so that the person will look thin.



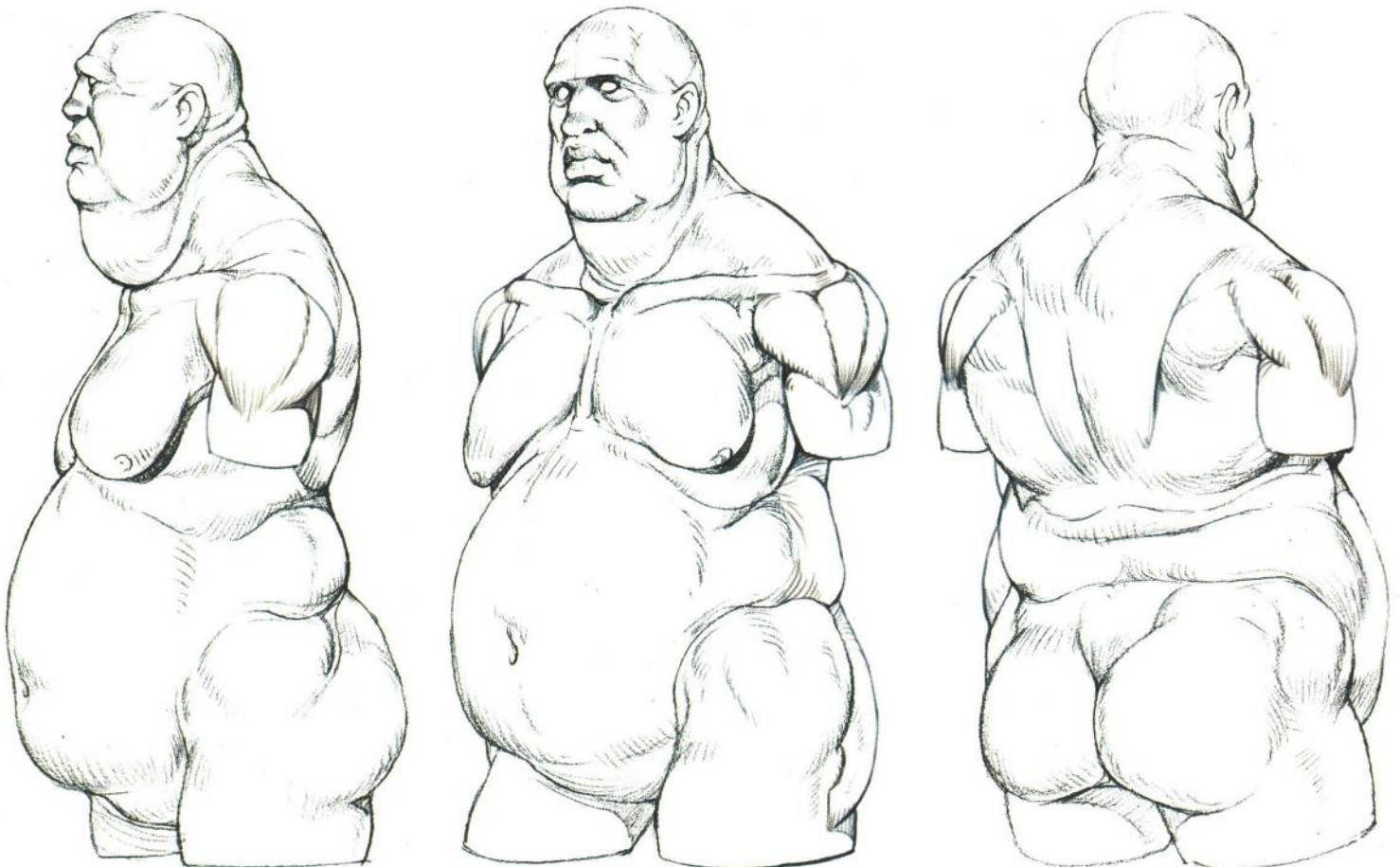


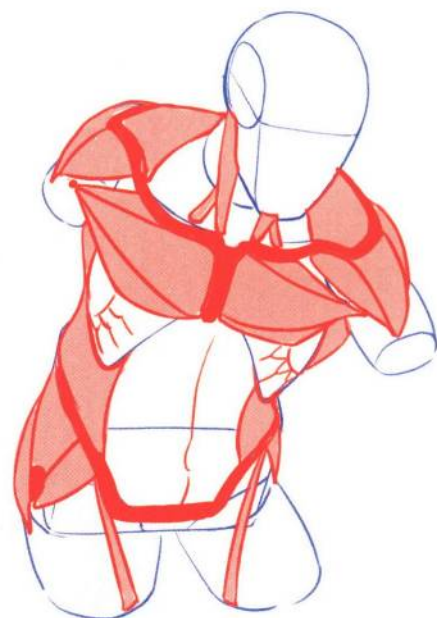
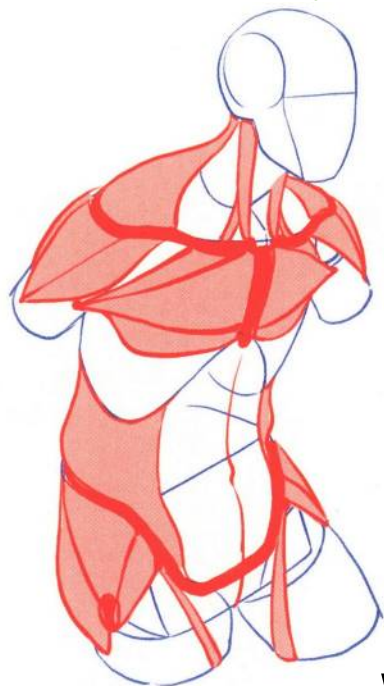
When you draw a thin person, you should make the flesh of the character sink into the body, and find the part of the bone that stands out clearly and specialize it, so that you can draw a more realistic thin person.



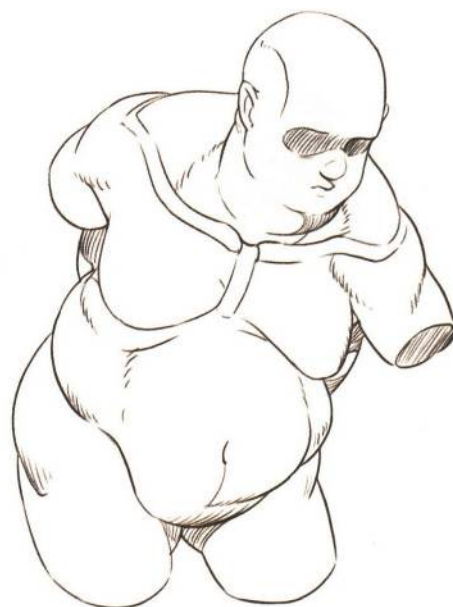
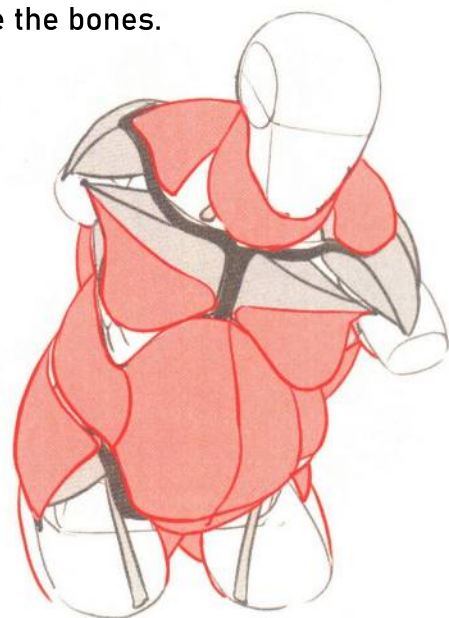
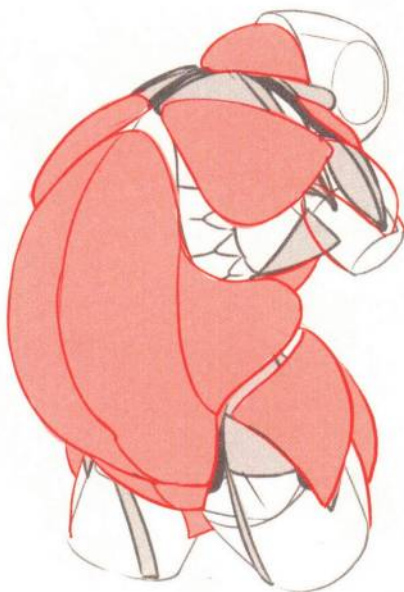


The fat of a fat person is soft, and under the influence of gravity, the fat will sag when it is bulging outward, like a water-filled balloon hanging on the bones. When drawing a fat person, it is necessary to increase the fat in his body, differentiate between the performance of the outer contour of the fat stacked in the form, so that the drawing of the fat person will be more reasonable.

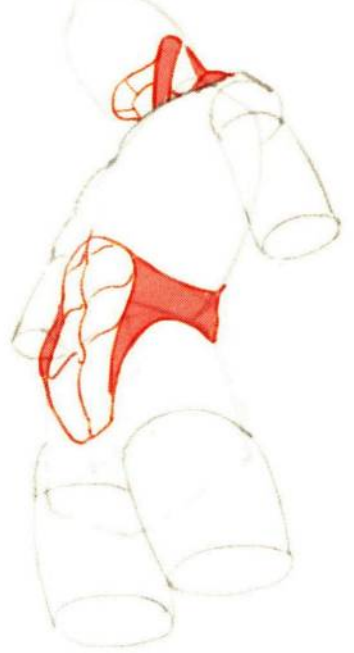
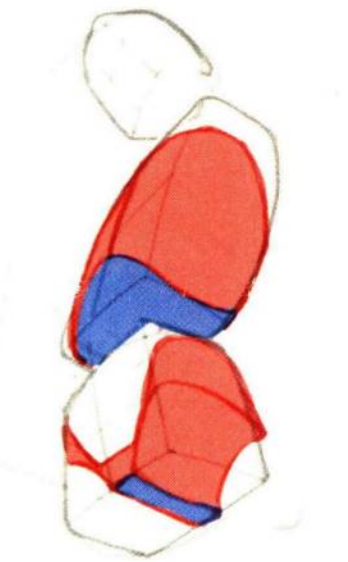
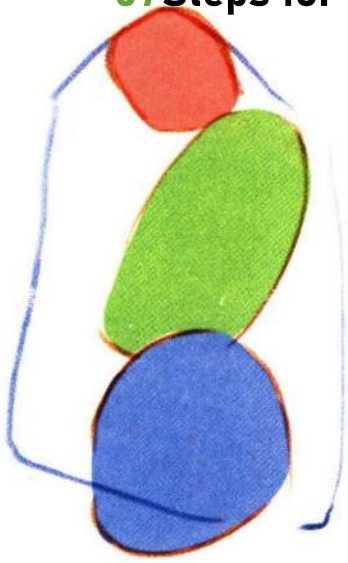




When a fat person is exercising, the body fat is pulled and squeezed along with the bones, and the fat bulges outside the bones.



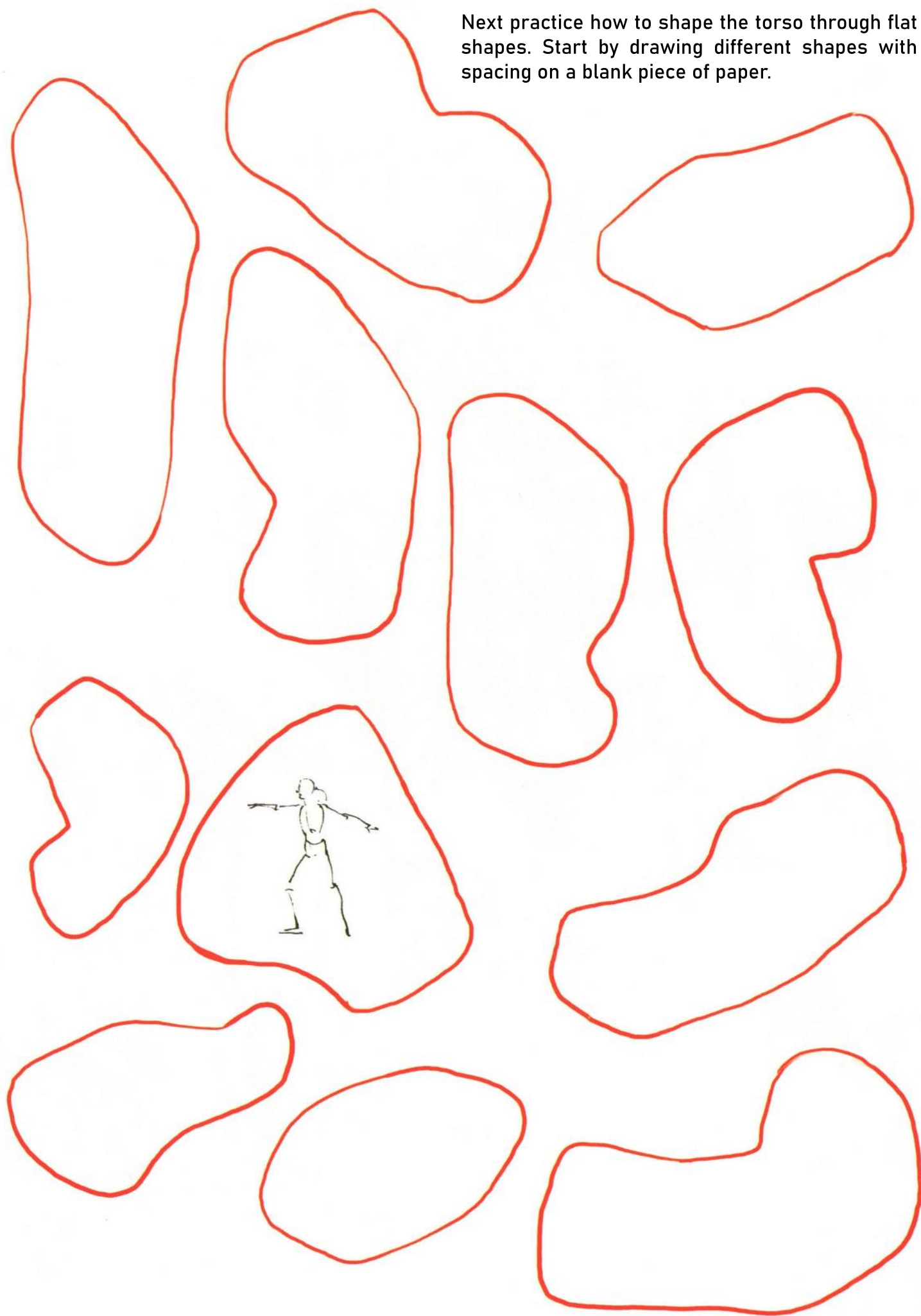
07 Steps for drawing the torso



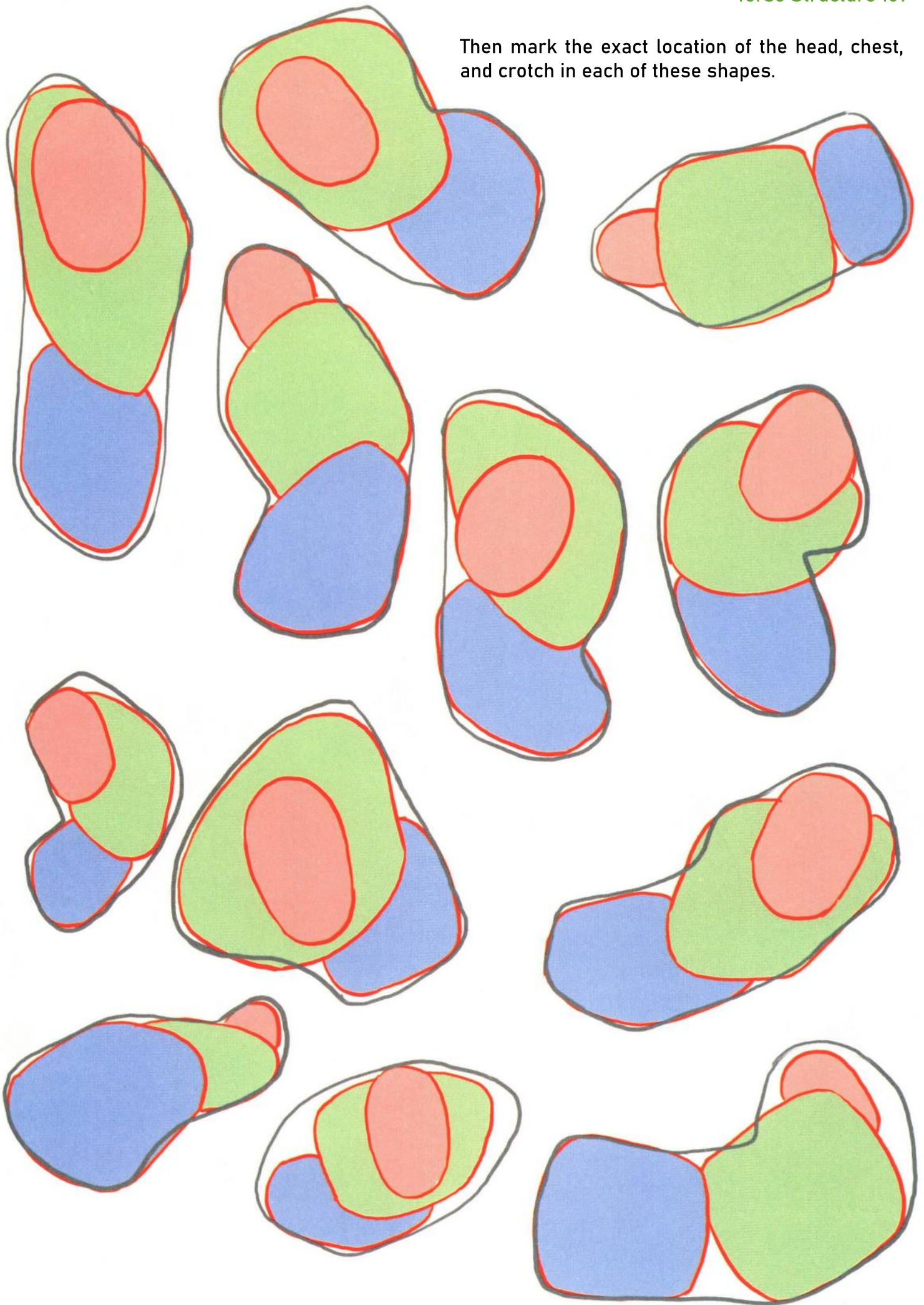
This is step-by-step demonstration of how to draw a torso, so that we can draw a torso with perspective. After mastering spatial relationship of the torso and the method of drawing the bones and muscles, we will be more comfortable when we draw the human body.



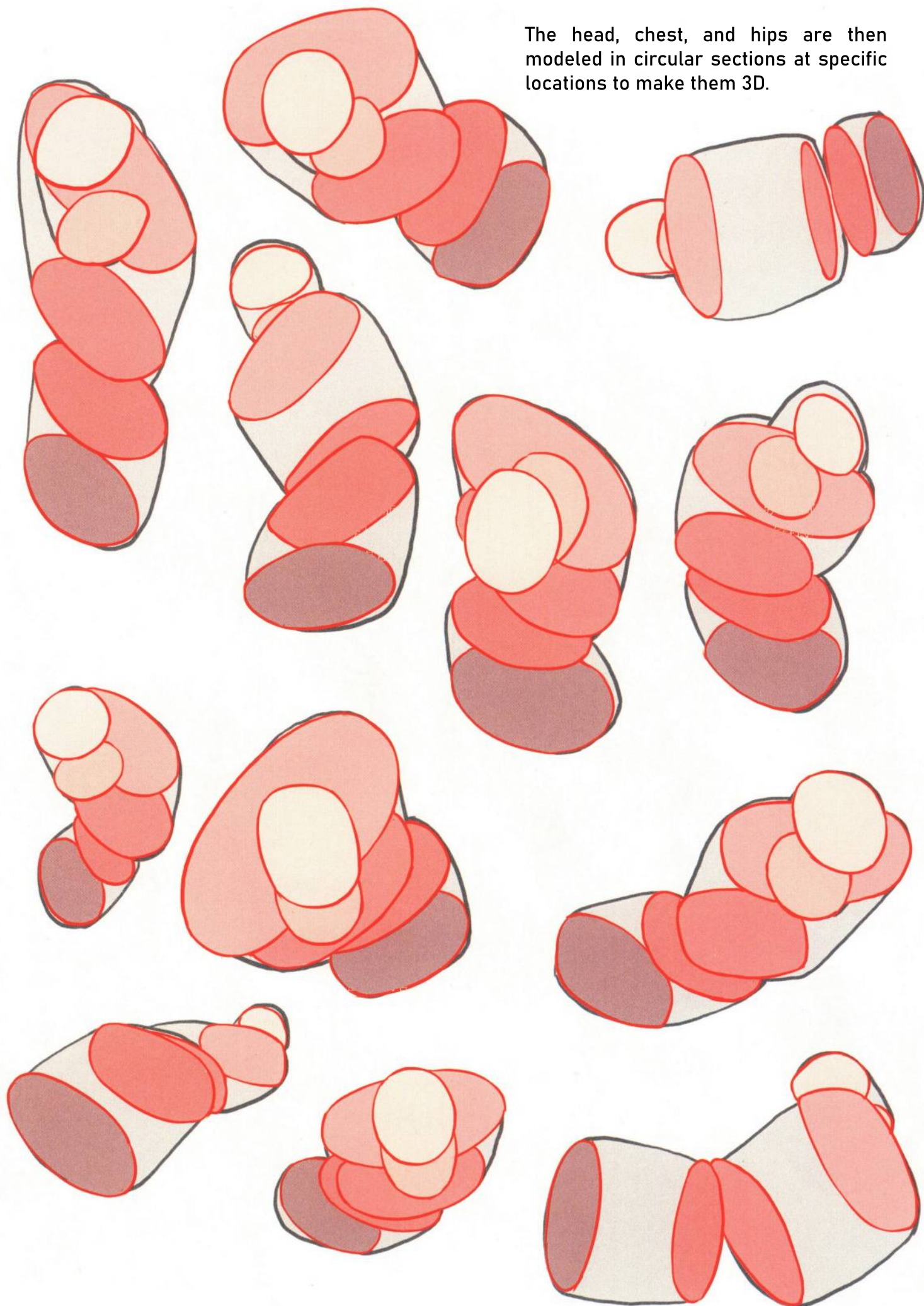
Next practice how to shape the torso through flat shapes. Start by drawing different shapes with spacing on a blank piece of paper.



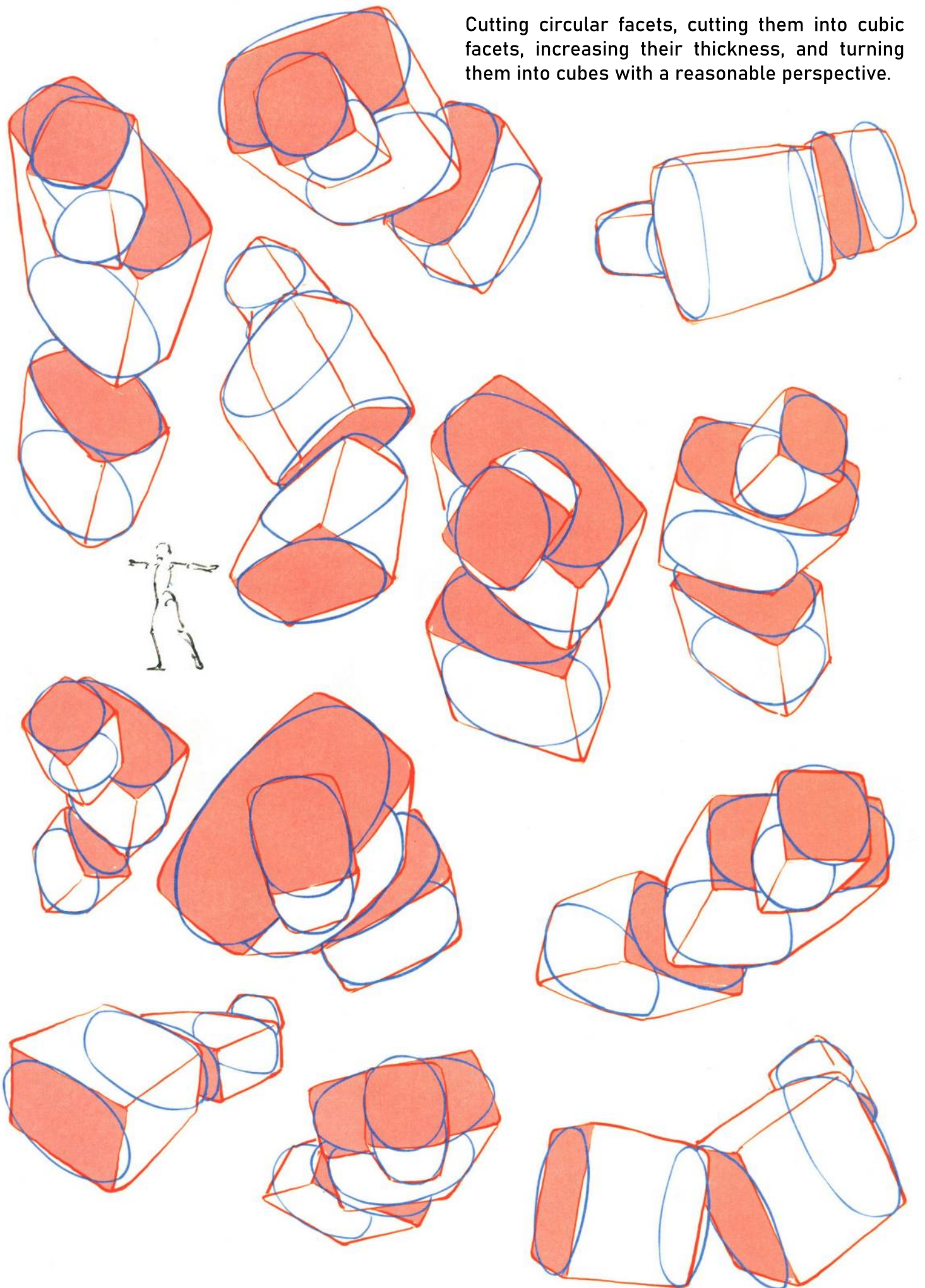
Then mark the exact location of the head, chest, and crotch in each of these shapes.



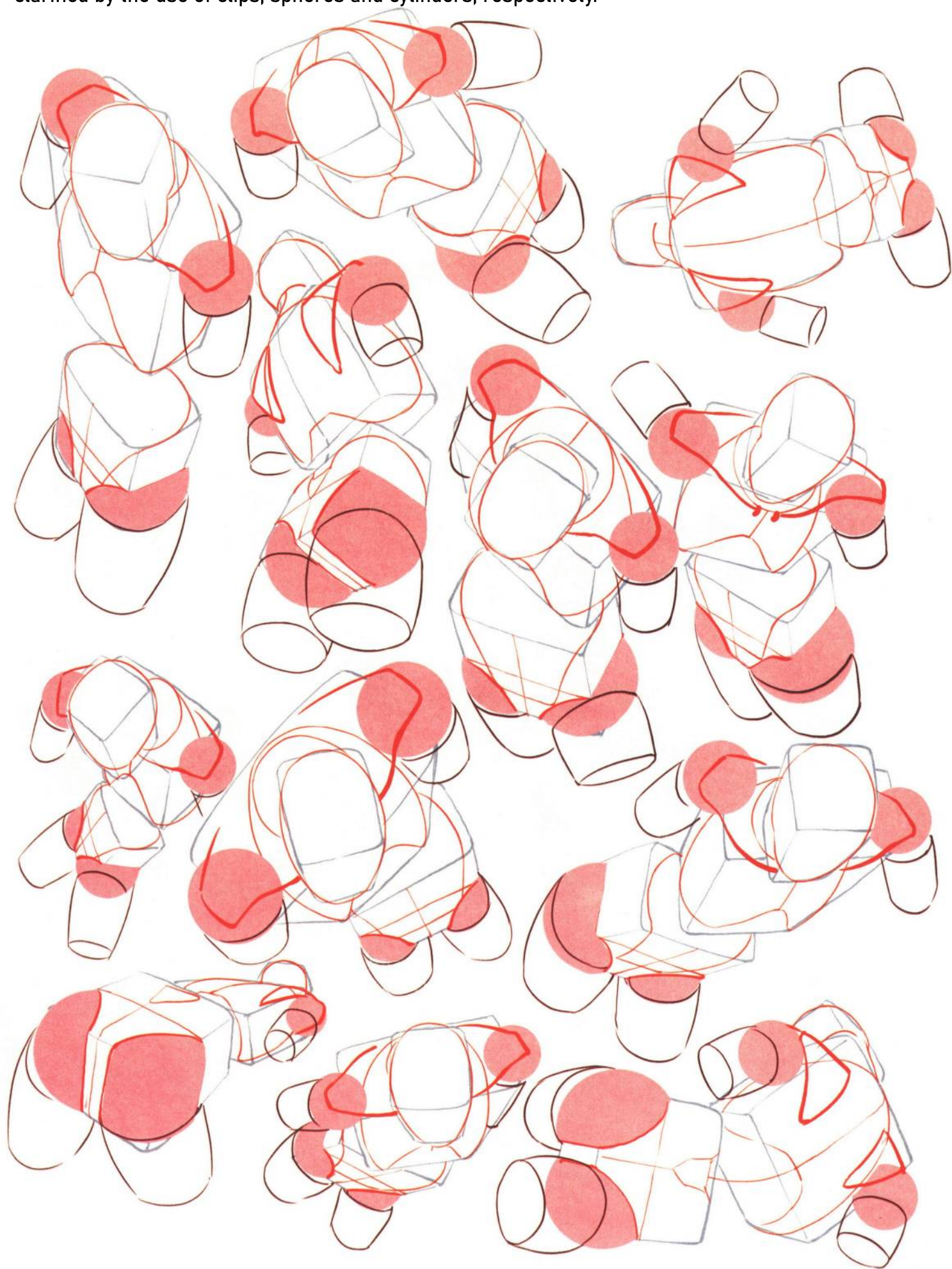
The head, chest, and hips are then modeled in circular sections at specific locations to make them 3D.



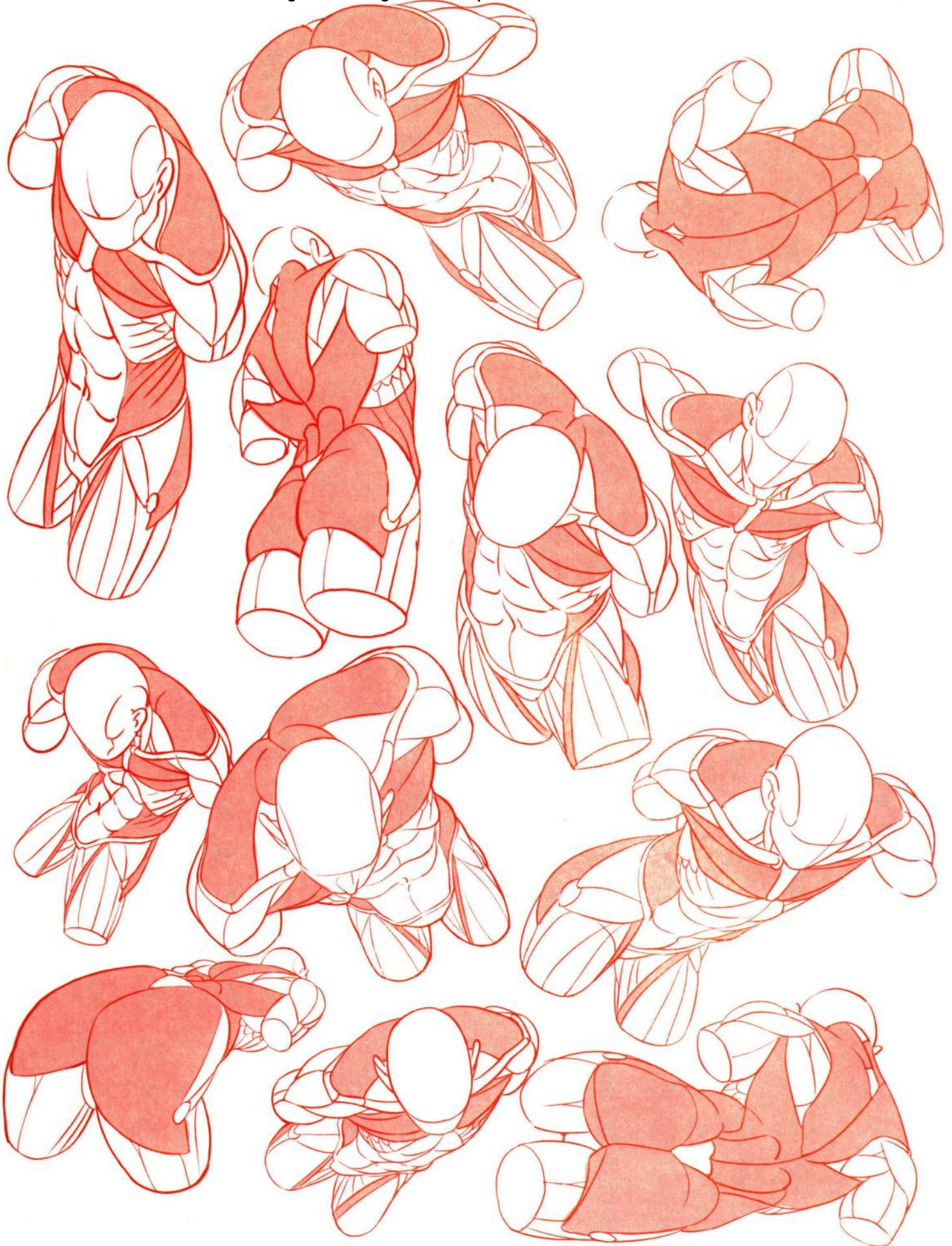
Cutting circular facets, cutting them into cubic facets, increasing their thickness, and turning them into cubes with a reasonable perspective.



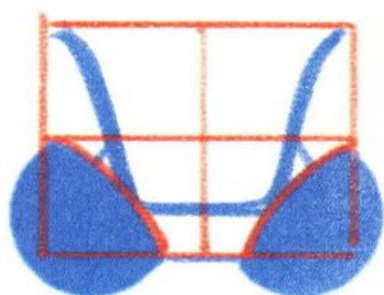
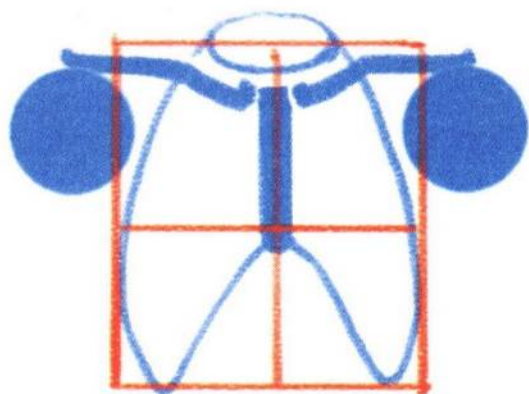
On the basis of the cube, the thorax and crotch are modeled, and the perspective of the limbs is clarified by the use of clips, spheres and cylinders, respectively.



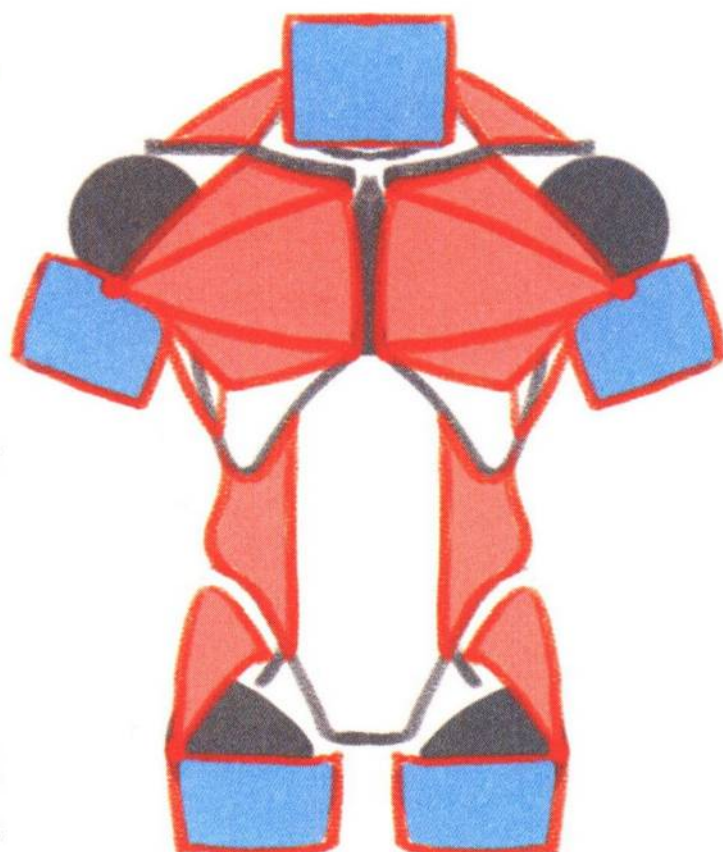
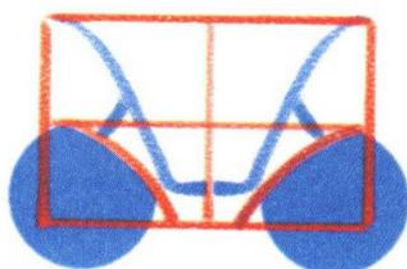
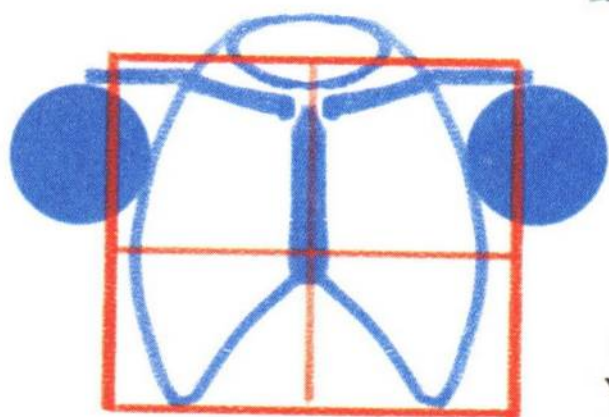
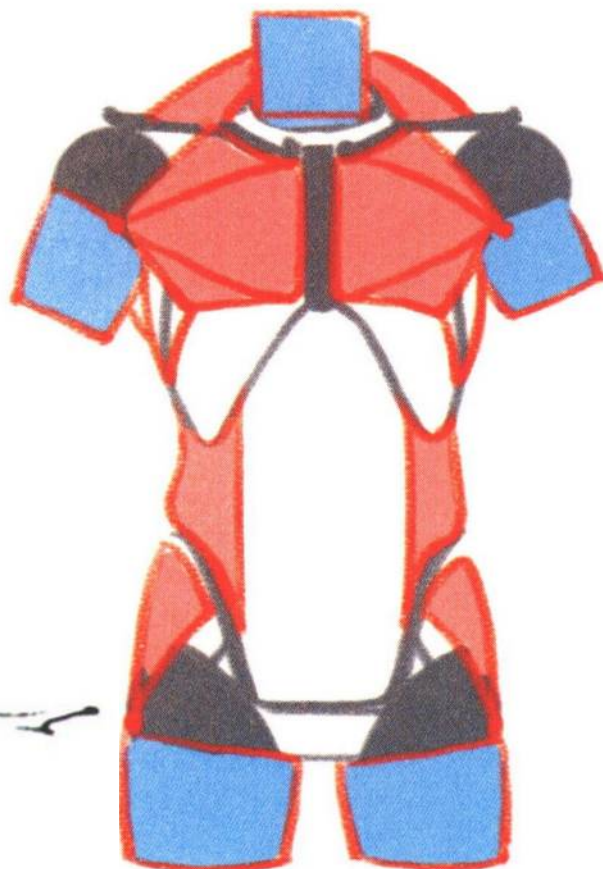
By adding muscles to these spatial supports and refining the lines of the supports, it is possible to create torsos with different angles through flat shapes.



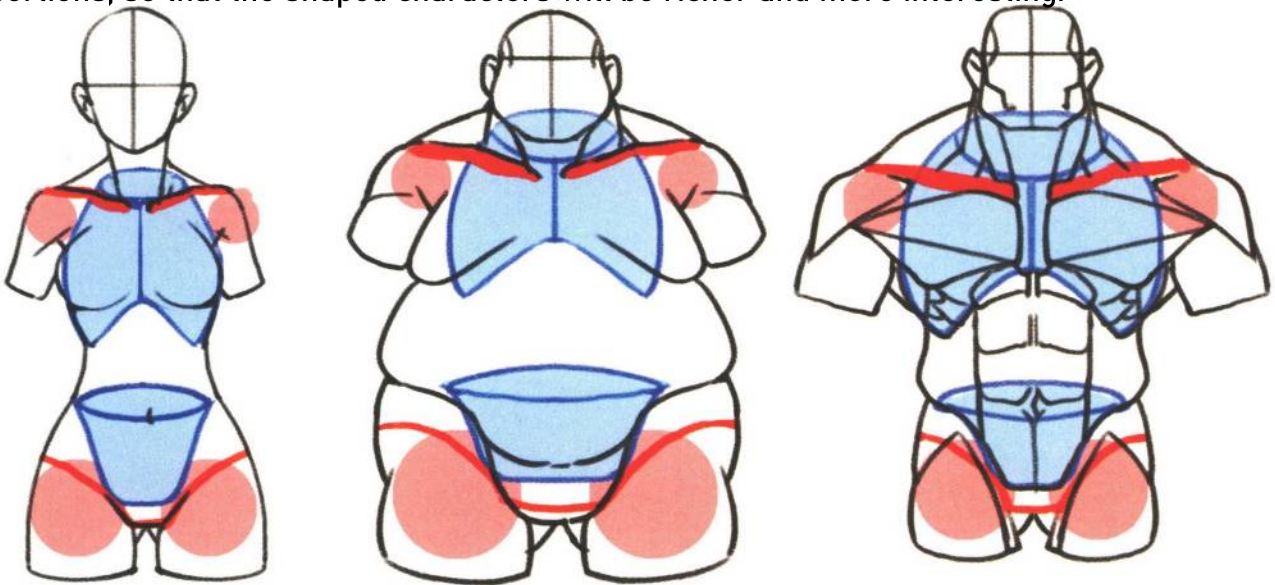
08 Drawing steps for variations and utilization of torso



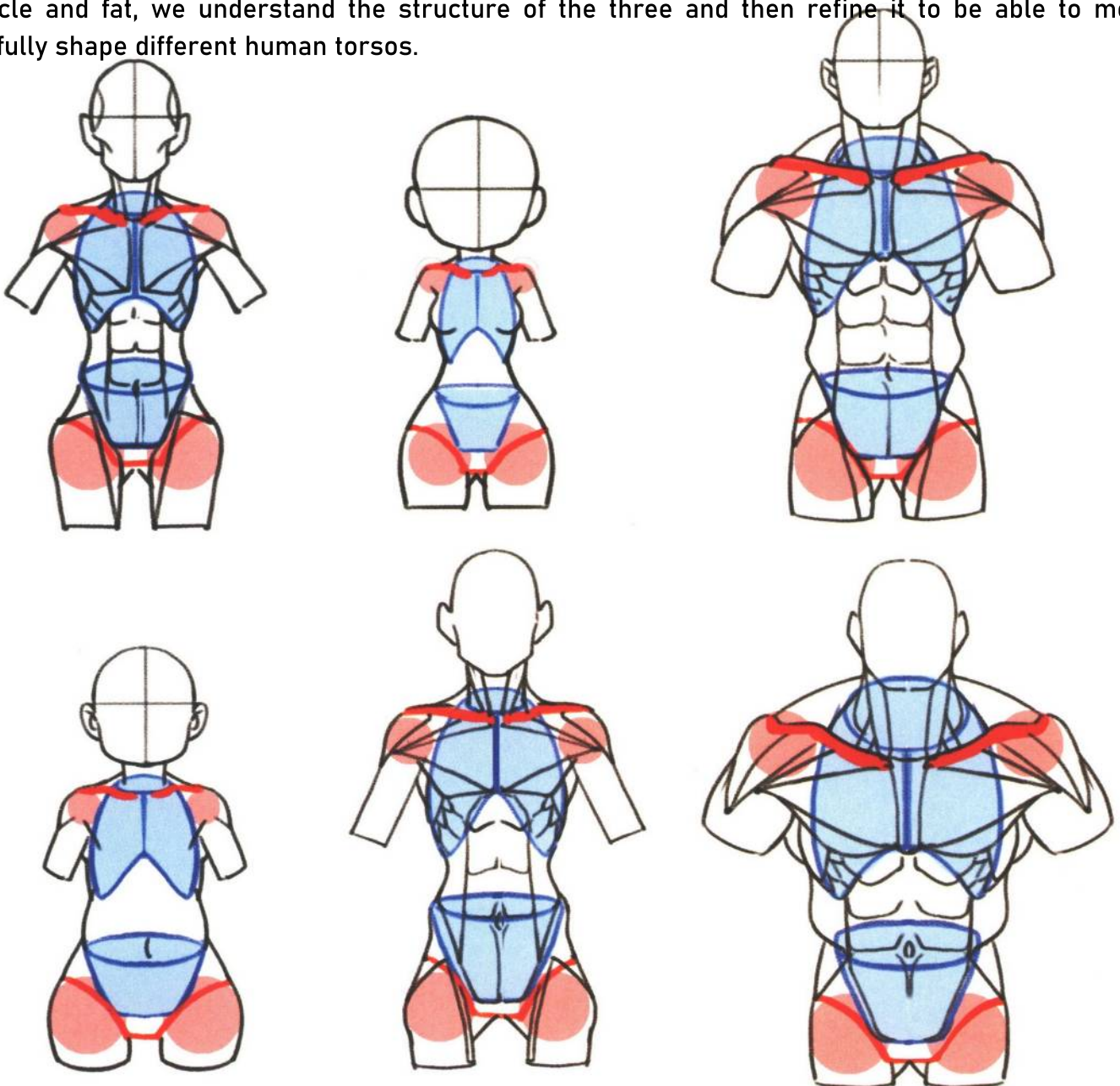
We can flexibly use the proportional variations of the human torso to model anime characters with different body shapes.

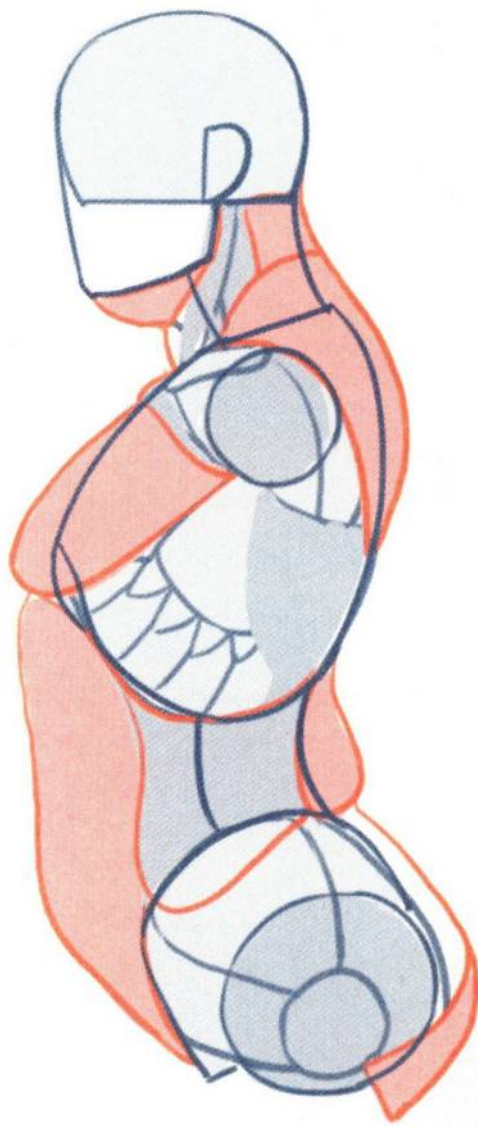
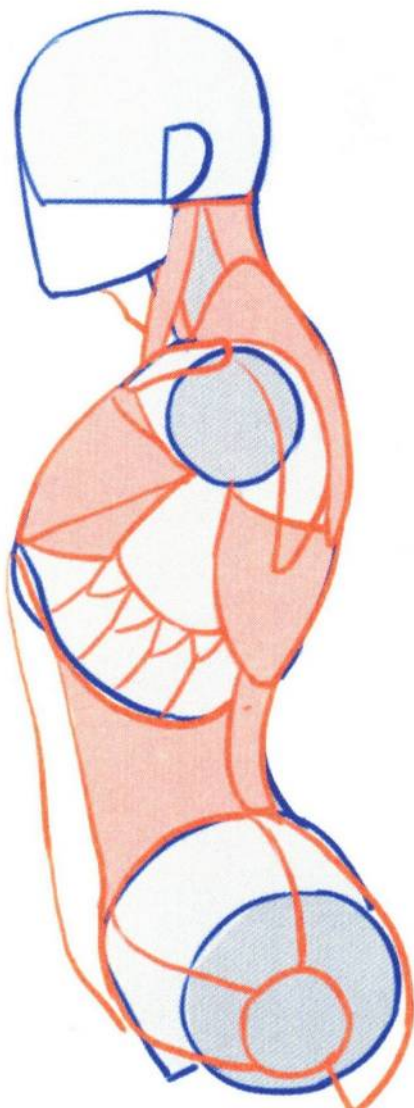
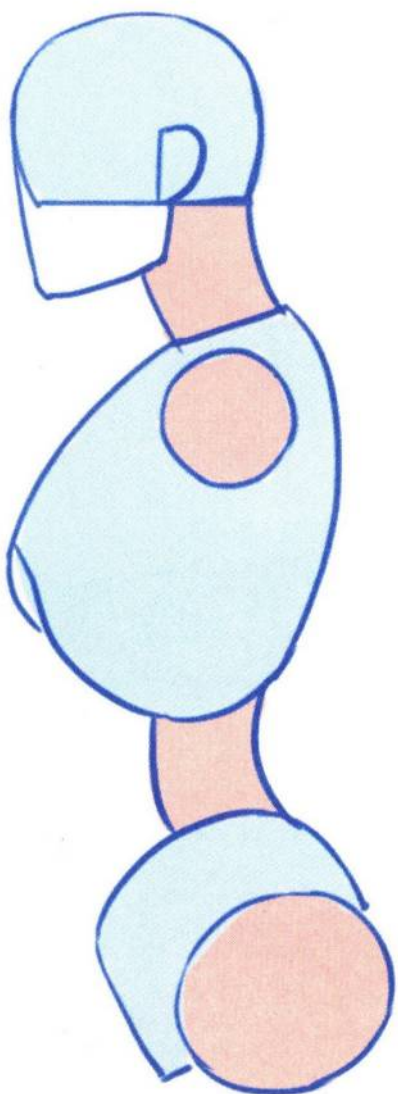
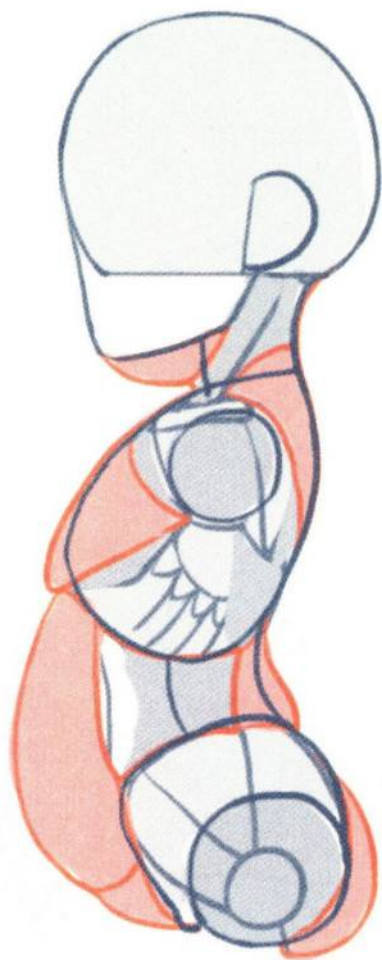
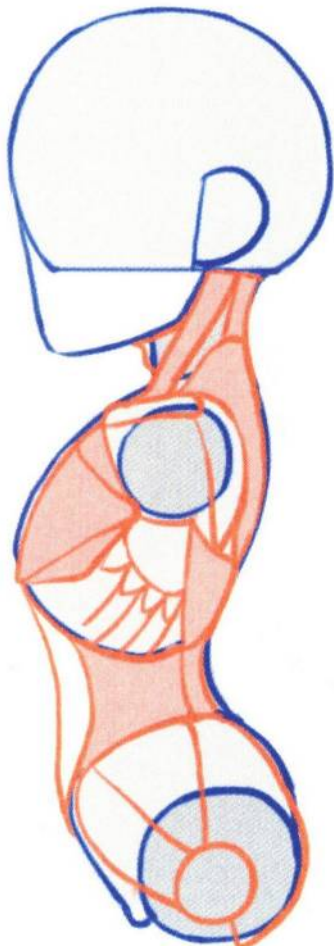
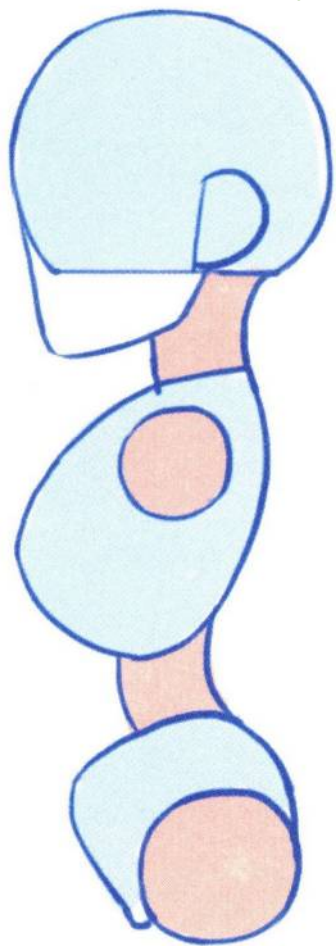


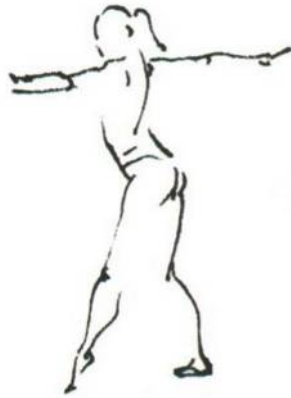
When shaping anime characters, we should pay more attention to the proportionality of the head, chest, crotch and the four spheres, and add muscles on the human body scaffolds with different proportions, so that the shaped characters will be richer and more interesting.

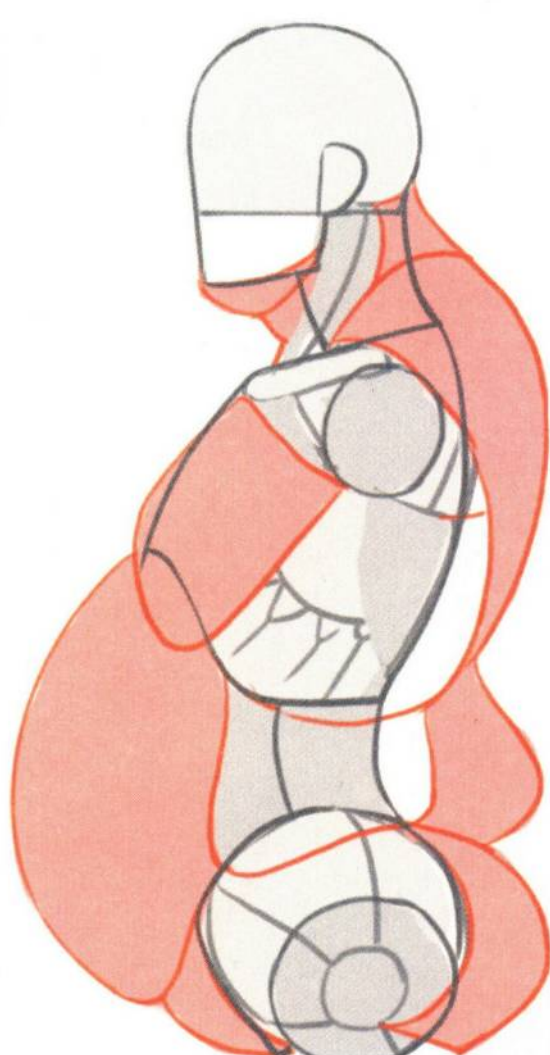
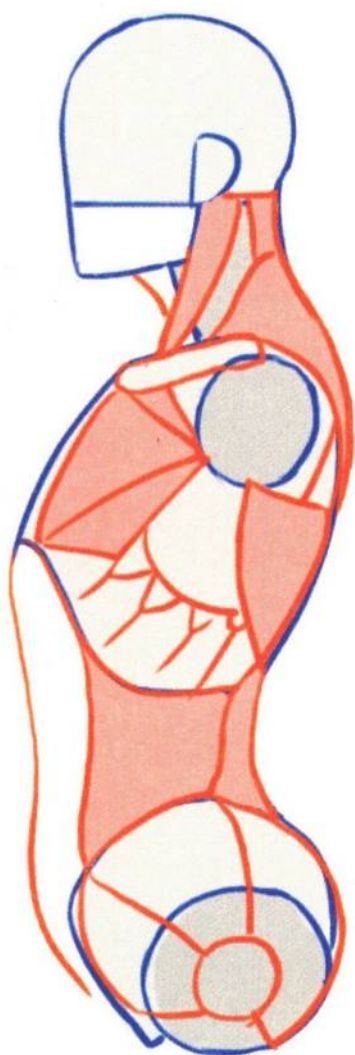
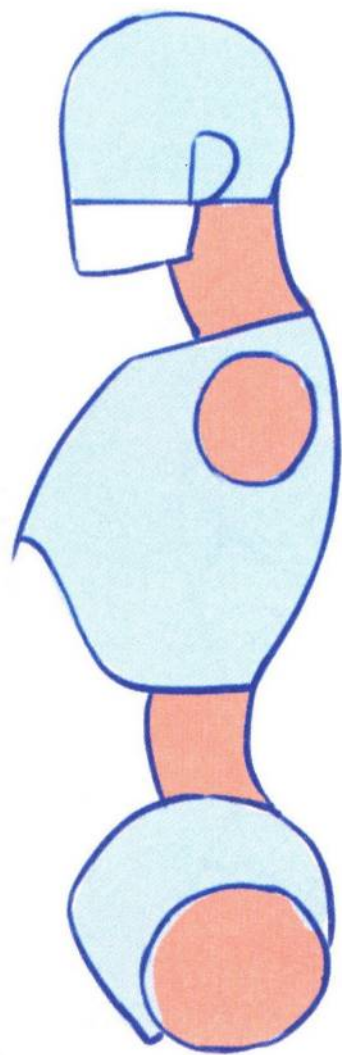
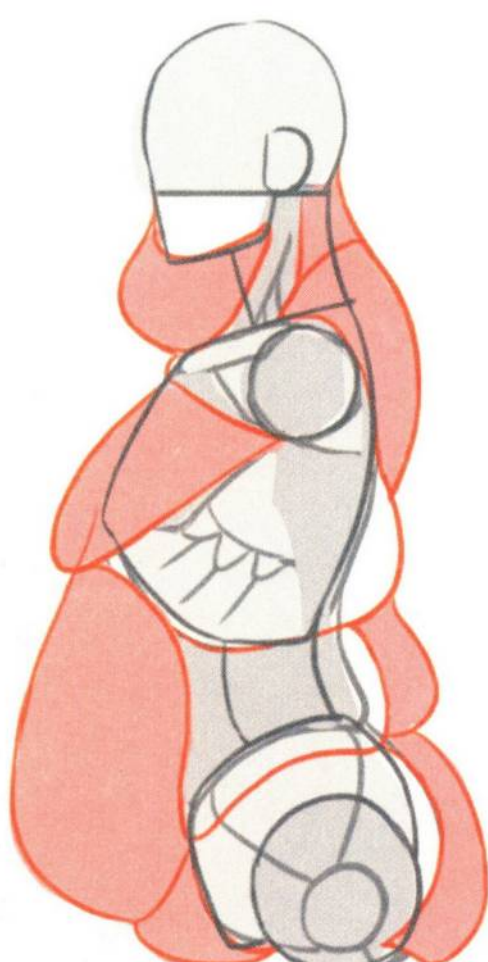
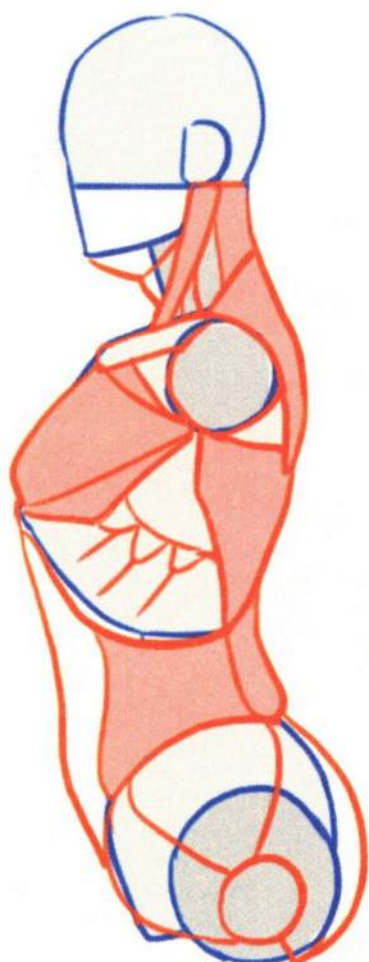
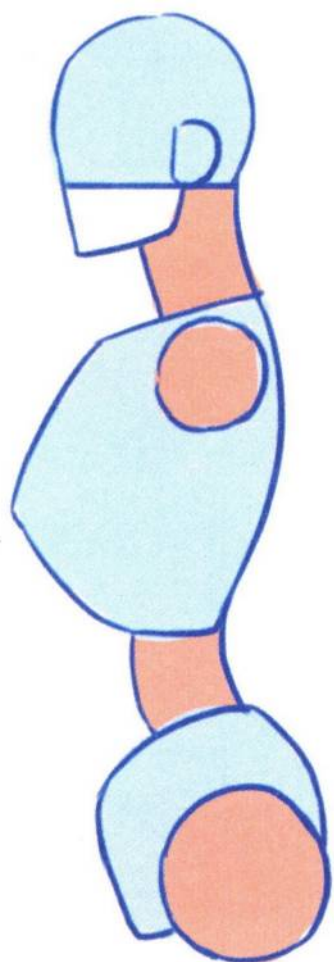


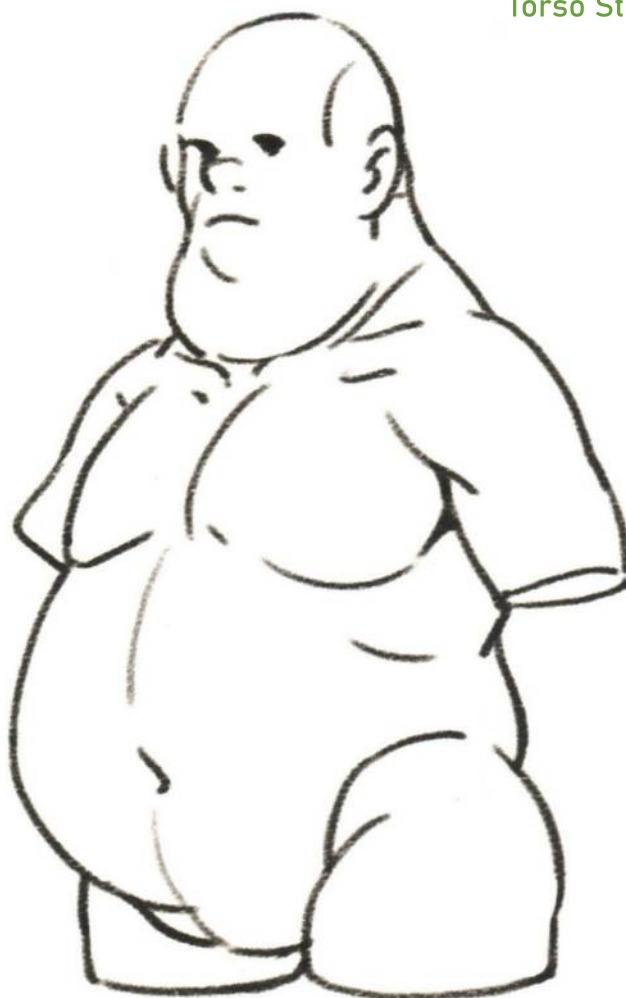
The difference in the body shape of the characters is mainly determined by the three factors of bone, muscle and fat, we understand the structure of the three and then refine it to be able to more skillfully shape different human torsos.



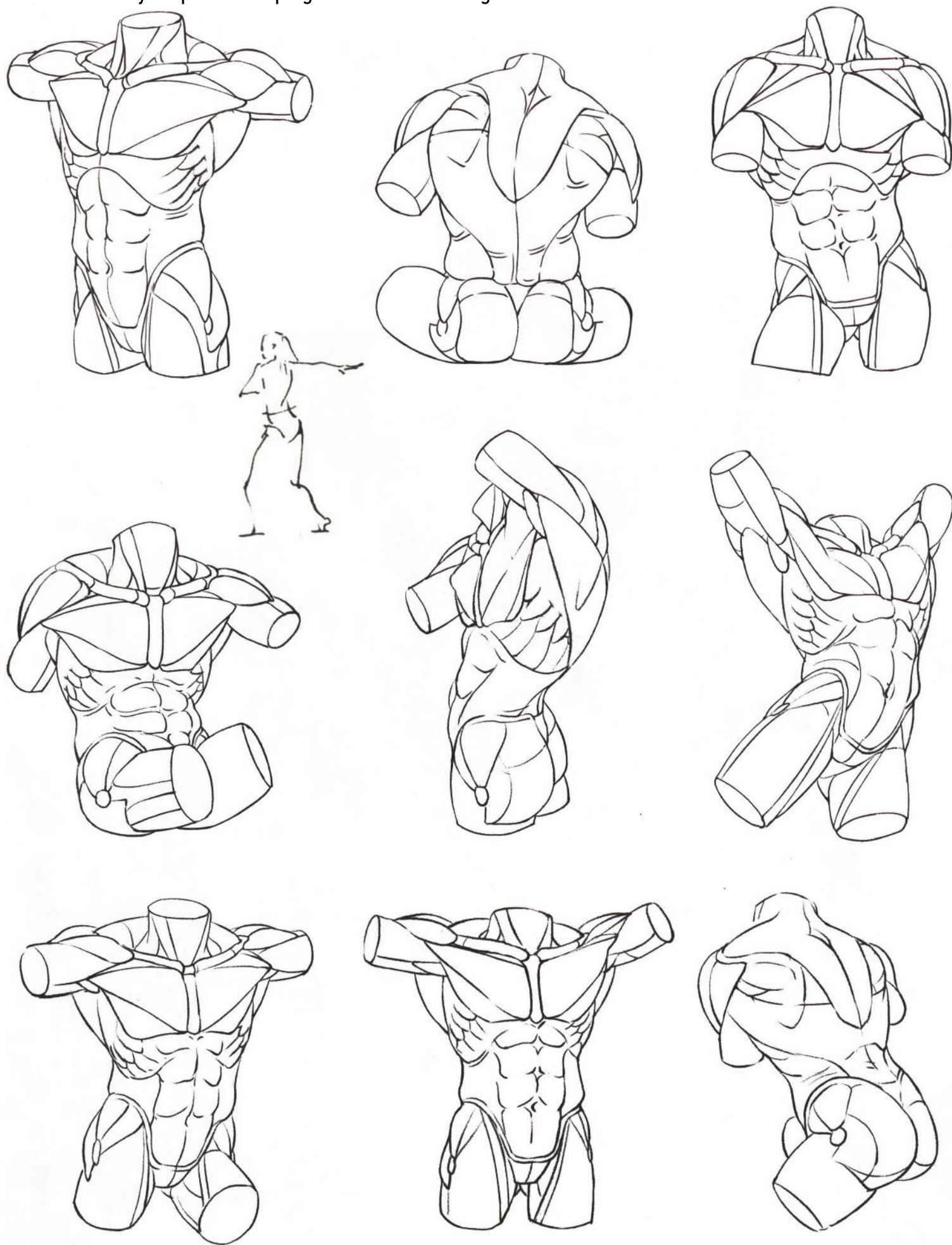






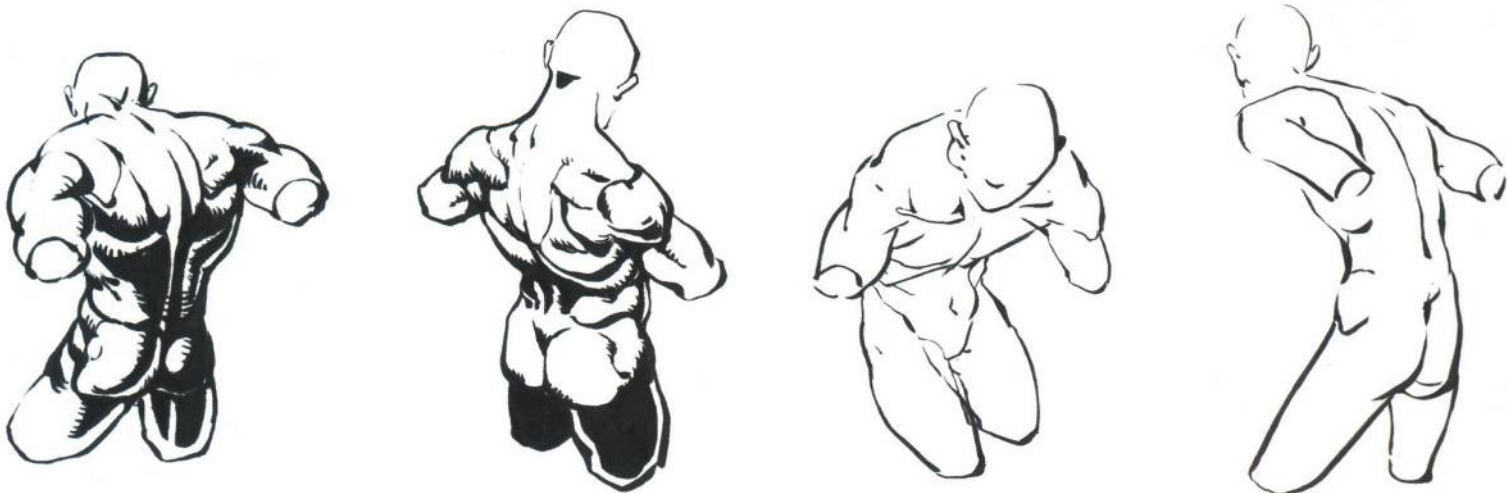
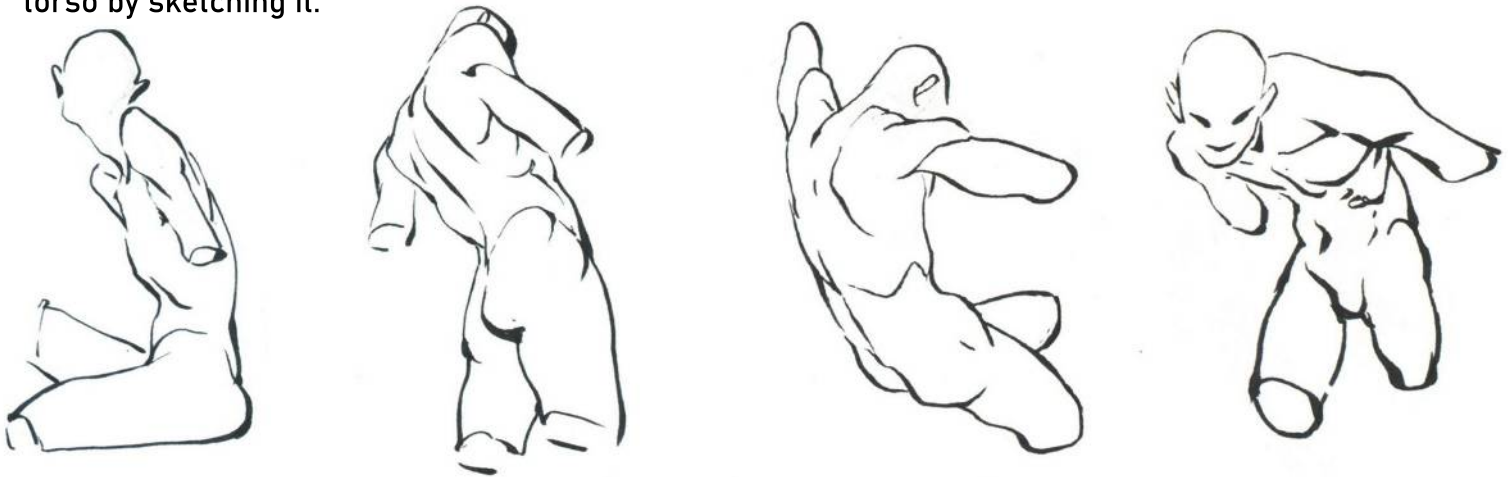


When we do exercises to draw muscles, we can analyze the musculature of some strong men, which is very helpful in shaping the torso's twisting state.





Once you have reached a certain level of proficiency in drawing the torso support, you can shape the torso by sketching it.





Chapter Four

Limbs Structure

第四章

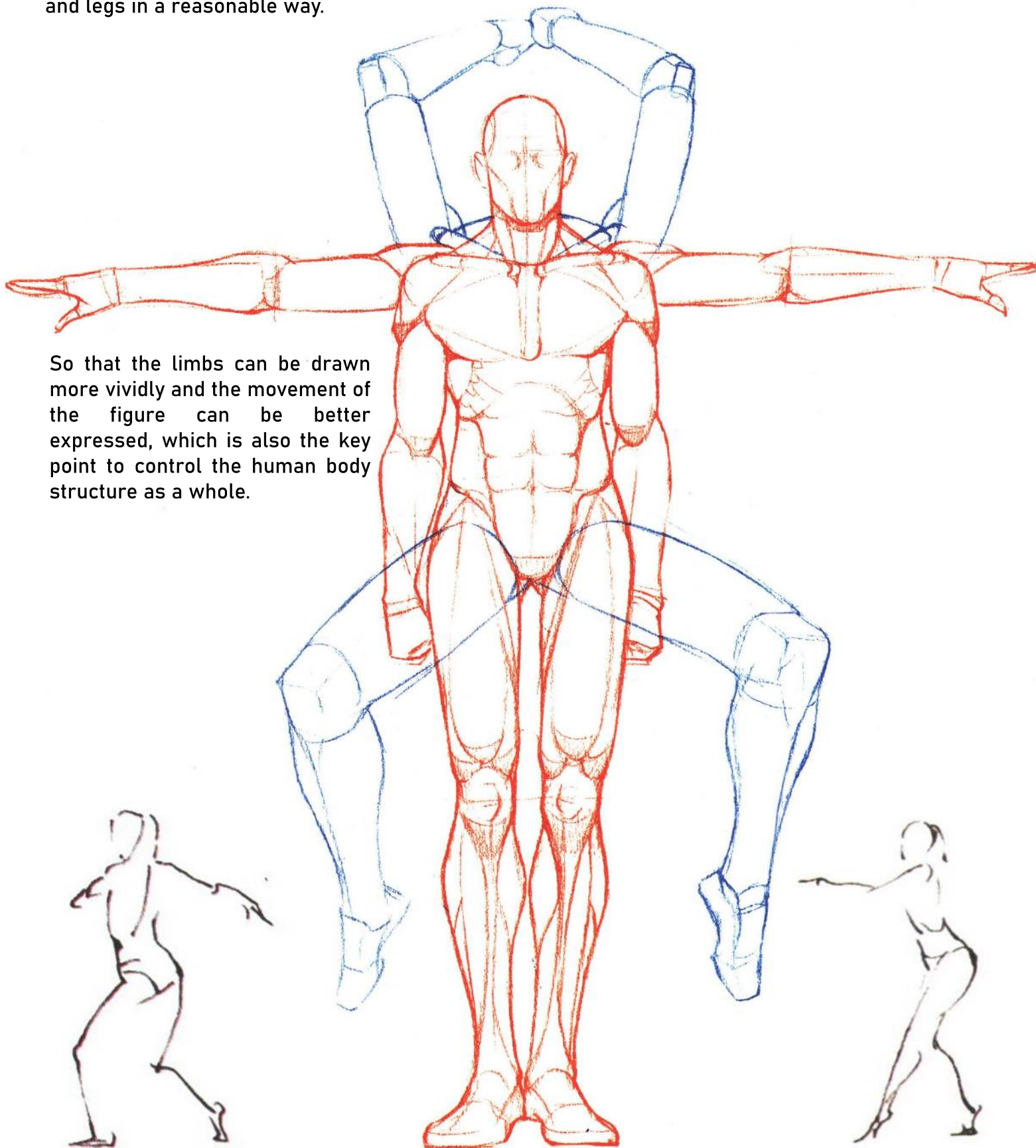
四肢结构

- 01 四肢结构拆解
- 02 肩膀的结构
- 03 上臂的骨骼和肌肉
- 04 肘部的结构
- 05 前臂的骨骼结构
- 06 手臂结构的绘制要点
- 07 手臂的绘制练习
- 08 胯部及下肢的结构关系
- 09 大腿肌肉的结构
- 10 膝关节的结构
- 11 小腿的结构
- 12 腿部肌肉的绘制练习
- 13 上肢结构的运用

01 Limb structure explanation

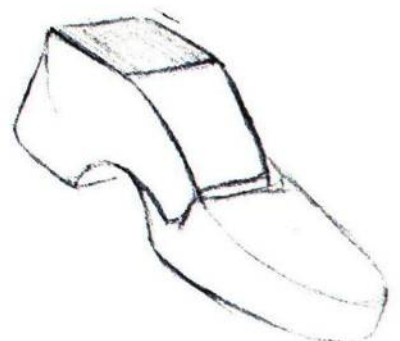
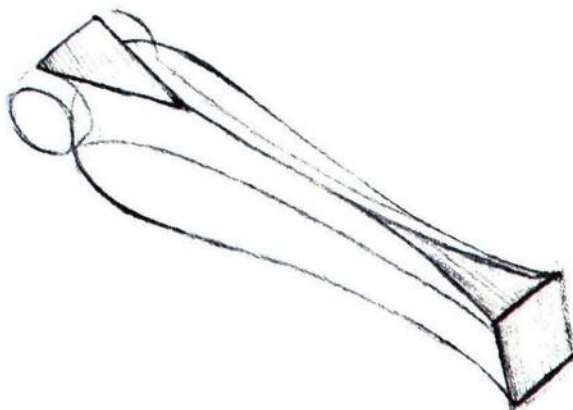
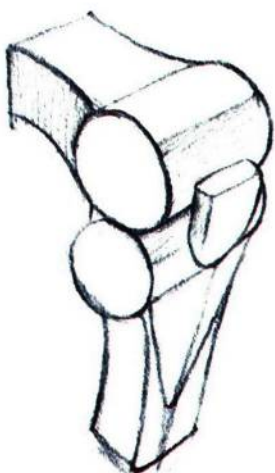
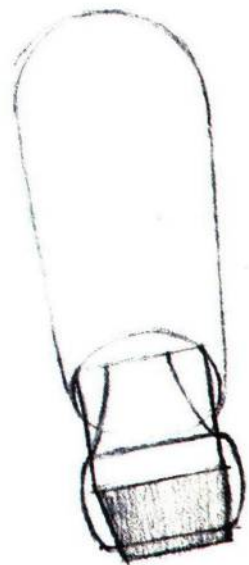
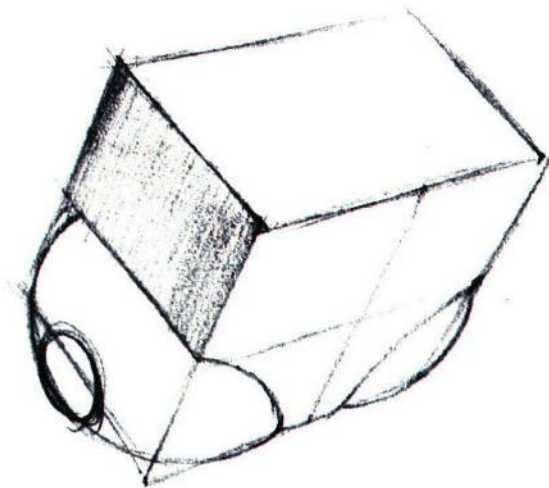
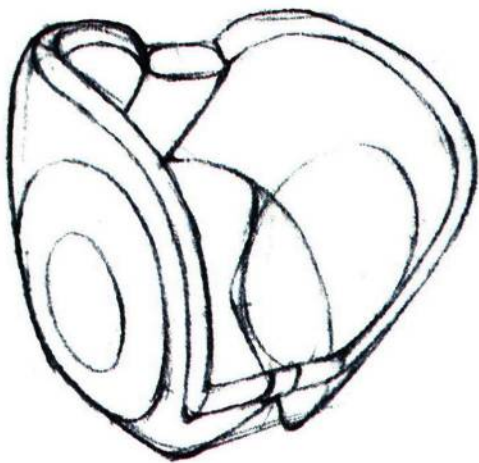
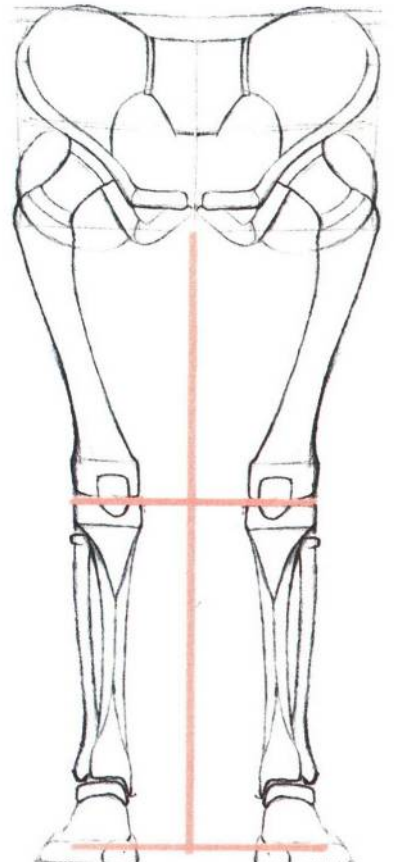
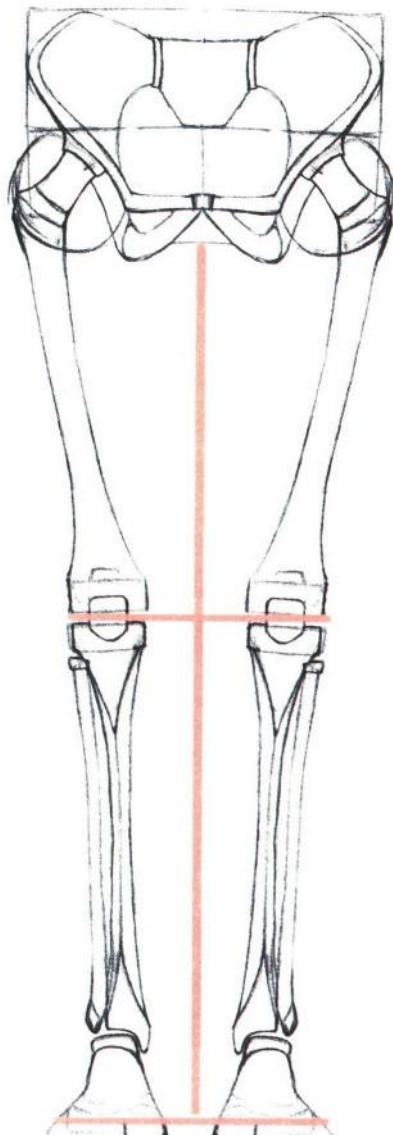
In order to draw vivid limbs, we first need to get the proportion, space and structure of the torso right. When the limbs are in motion, we should pay attention to the state of the spheres in the shoulders and hips, take the four spheres as the starting point, draw cylinders representing the arms and legs to extend in different spaces and directions, and finally express the joints of the arms and legs in a reasonable way.

So that the limbs can be drawn more vividly and the movement of the figure can be better expressed, which is also the key point to control the human body structure as a whole.

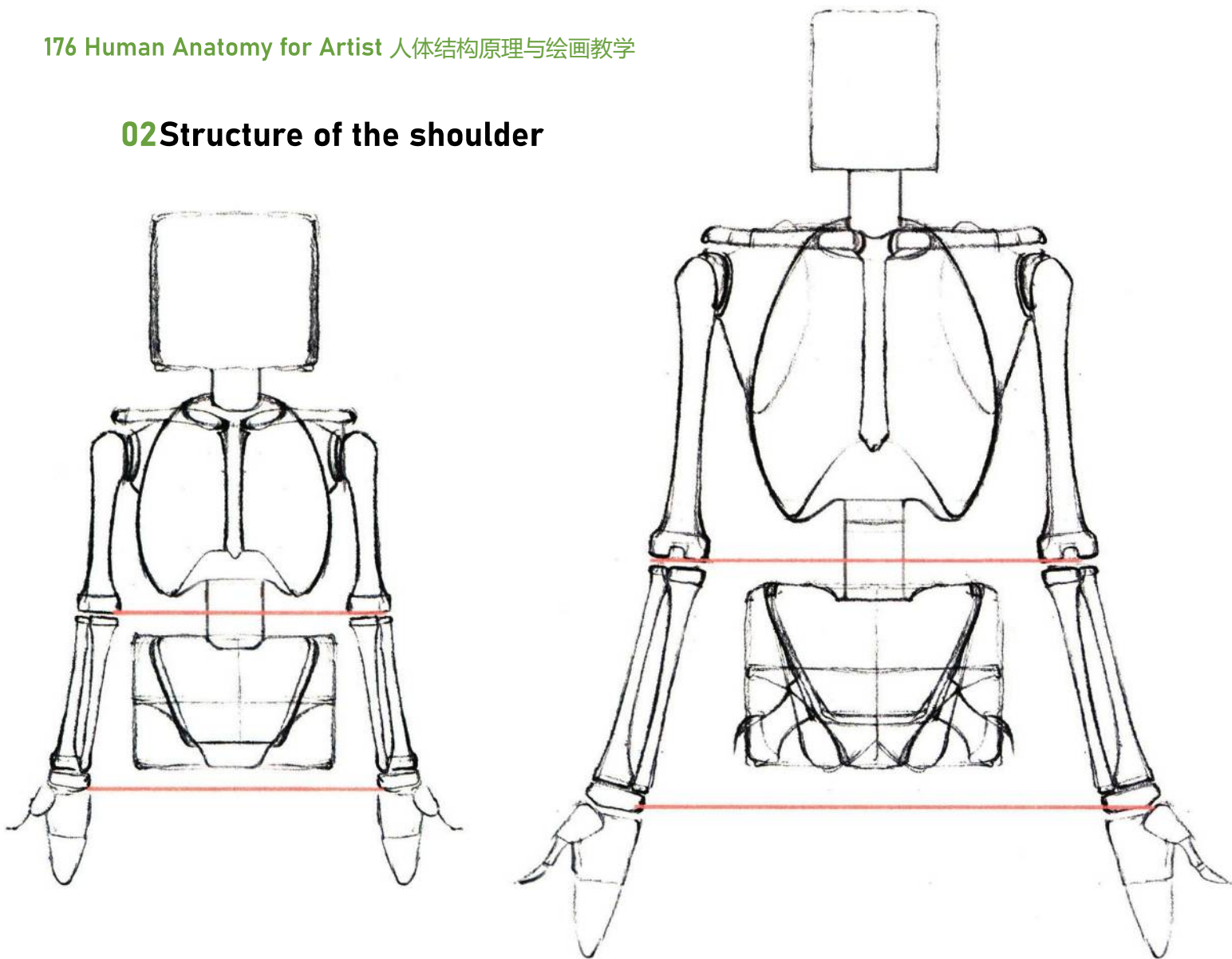


The proportions of the lower half of the body can be quickly determined by drawing a straight line between the legs from the top of the leg to the ground, dividing the line in half and placing the knee joint at exactly one-half of the line.

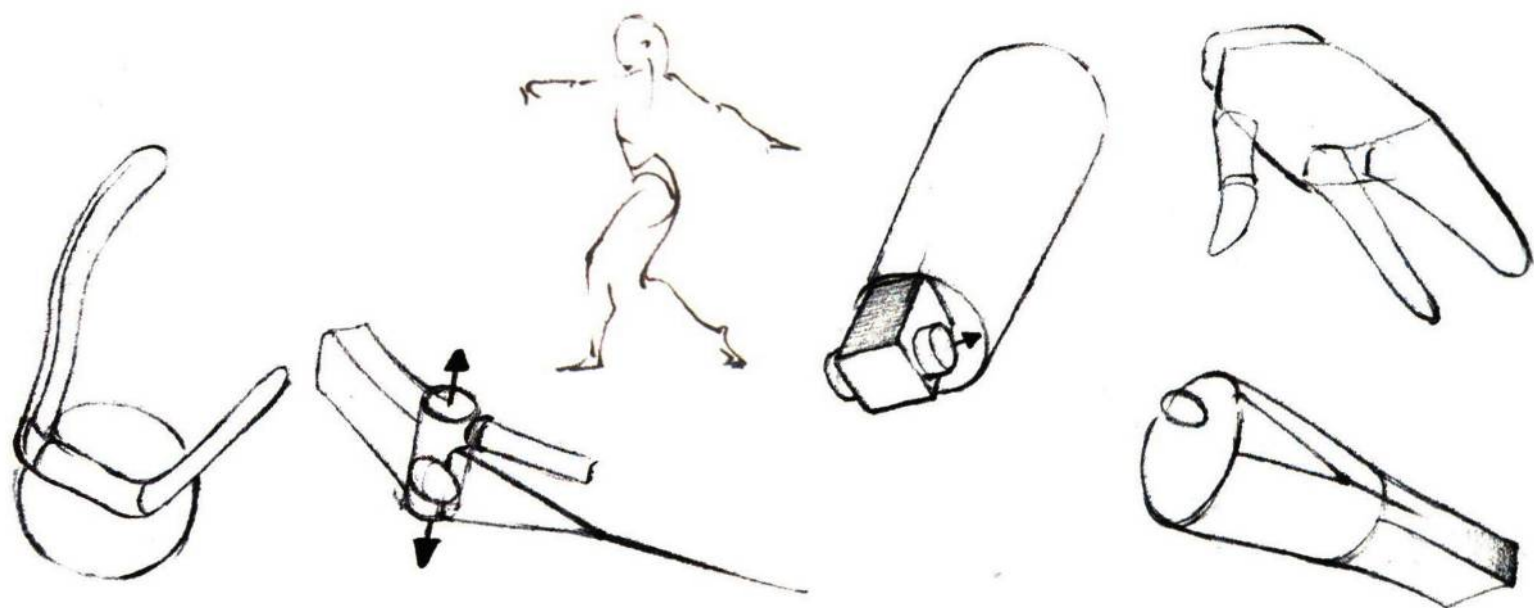
The lower half of the human body consists of the pelvis, the greater trochanter, the thigh, the knee, the calf, and the foot, and we can understand these parts with the help of geometry, so that we can express their spatial relationship when we draw the lower half of the body in motion.



02 Structure of the shoulder

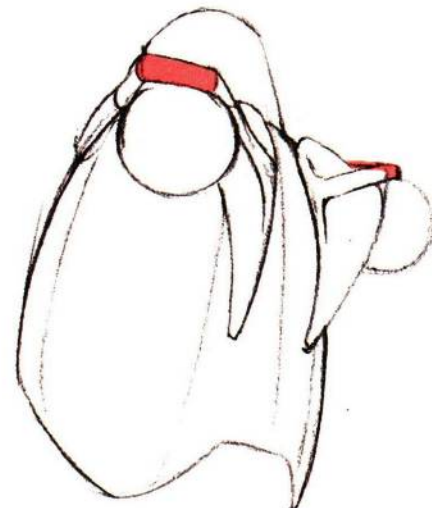
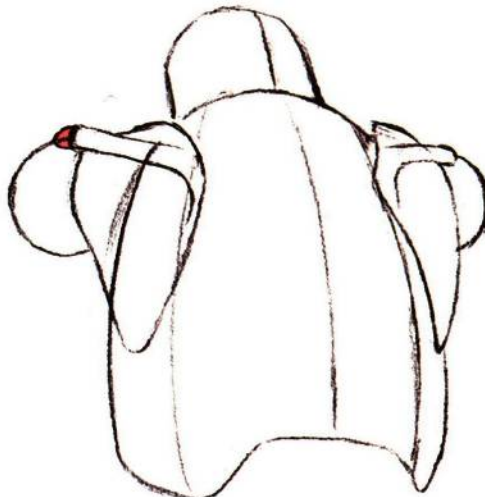
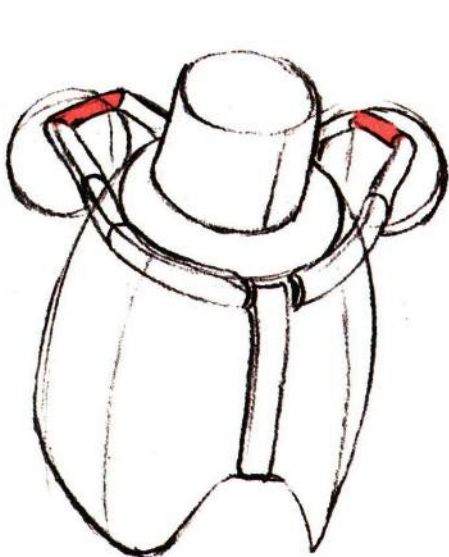
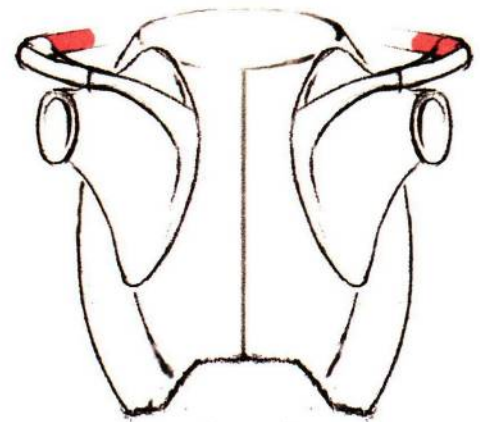
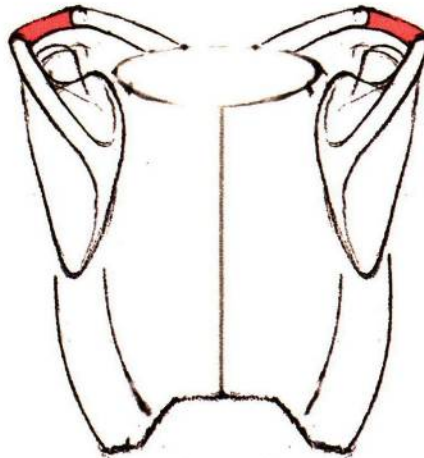
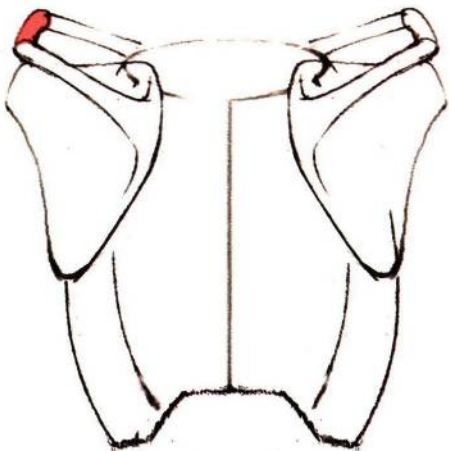
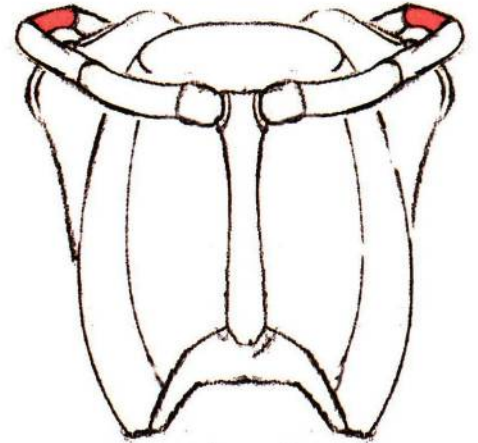
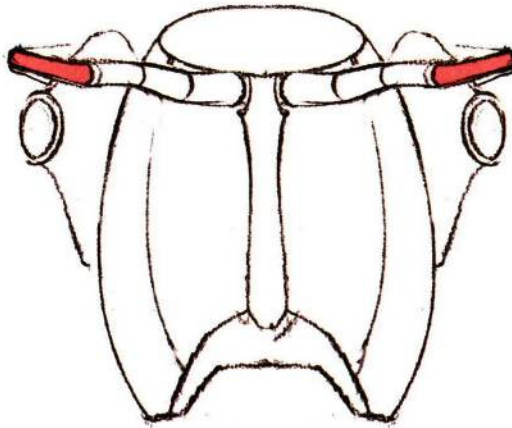
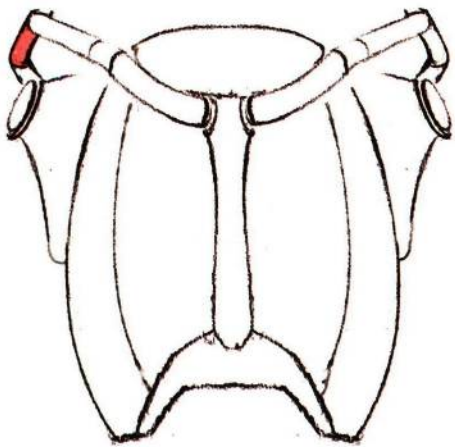
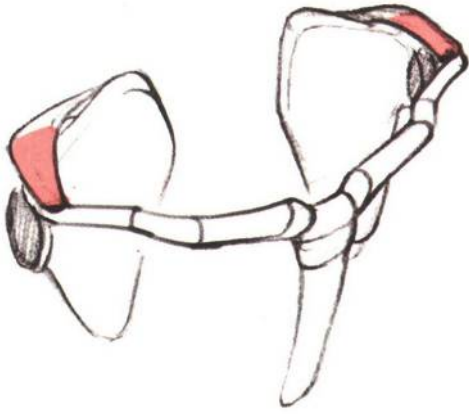


There is no fixed value for the length of the arm, it varies from age to age. As you can see in the picture, when the arm hangs down naturally, the elbow joint is at the center of the waist. When the arm hangs down naturally, the elbow joint is at the center of the waist and the wrist joint is a little below the crotch. The ratio of the arm to the torso does not vary much between age groups.

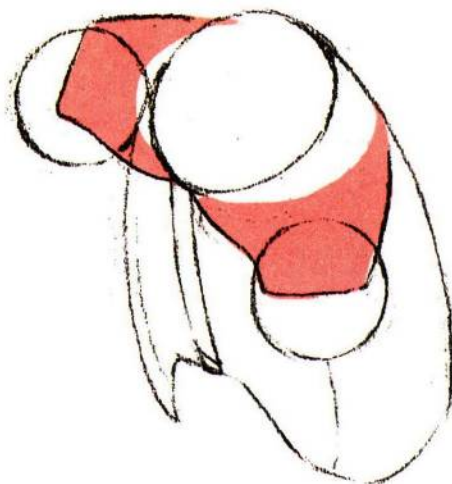
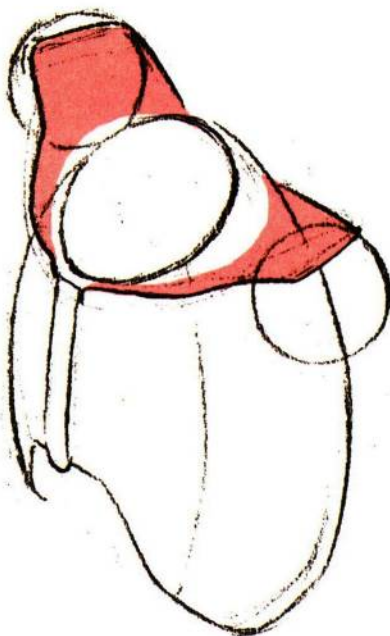
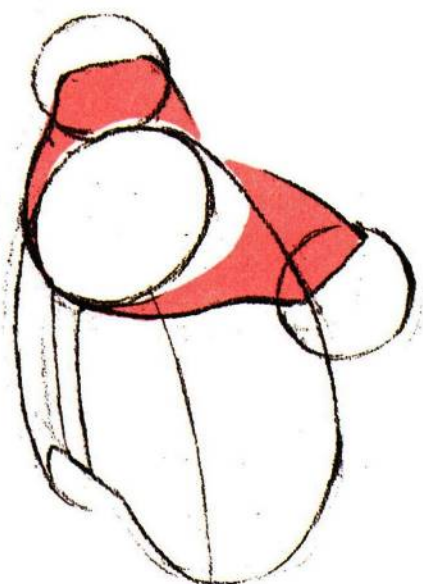
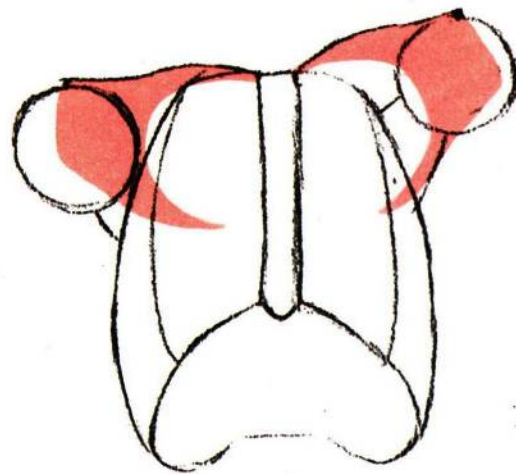
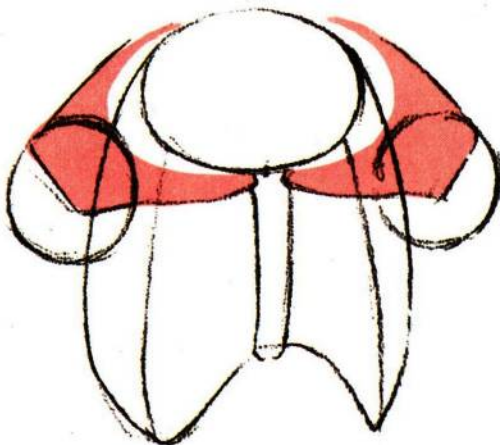
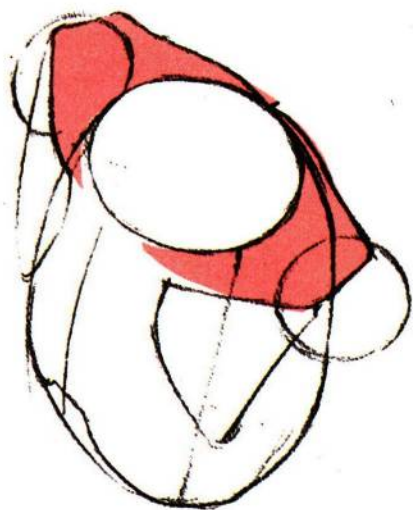
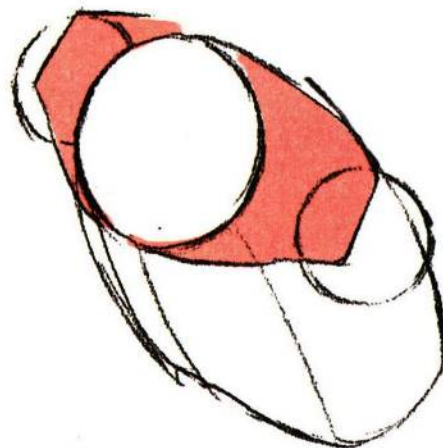
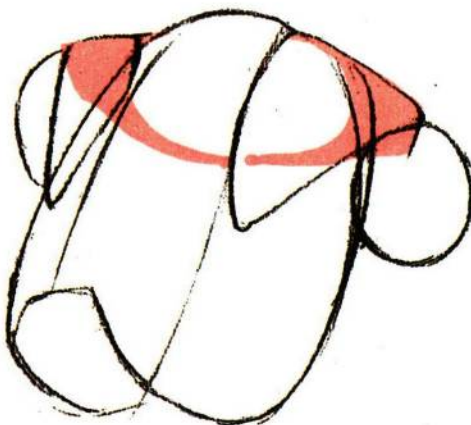
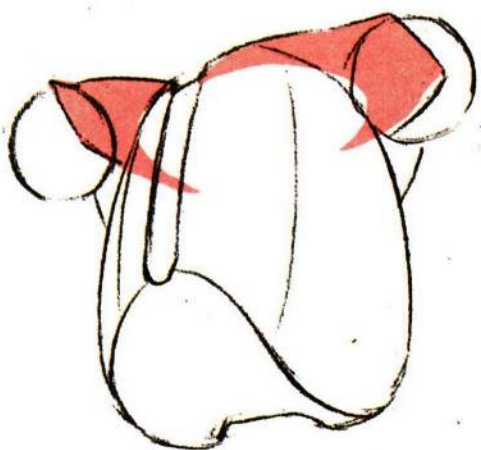
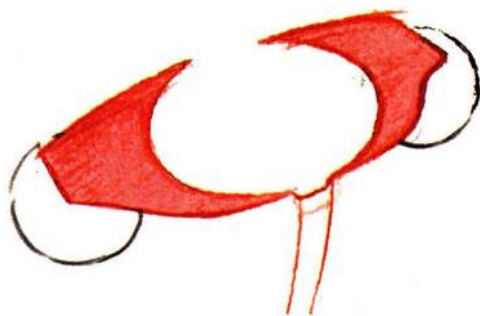


The upper extremity consists mainly of the shoulder, upper arm, elbow, forearm, and palm.

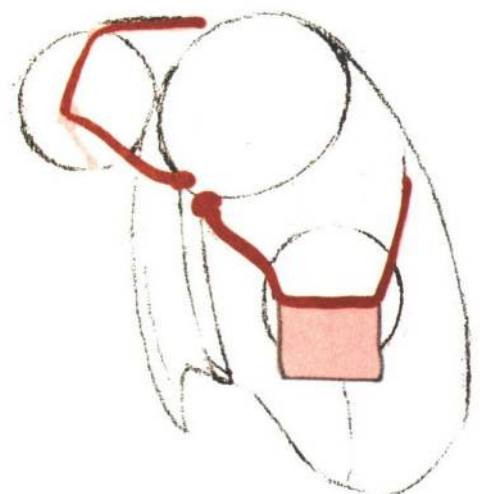
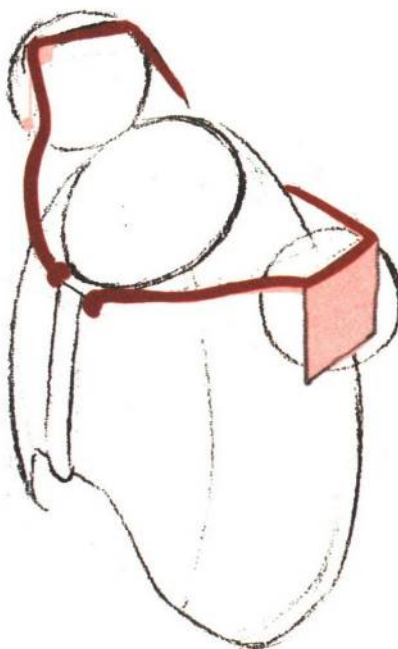
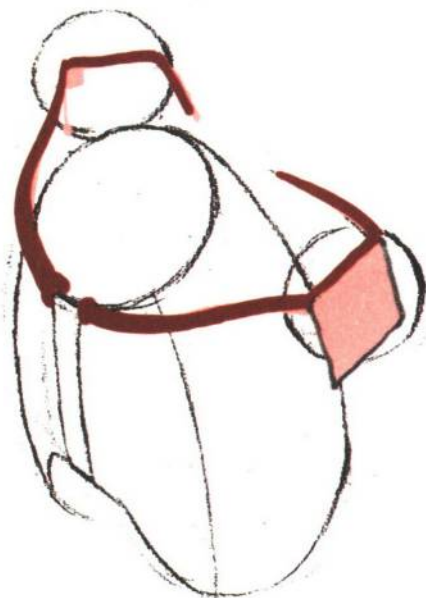
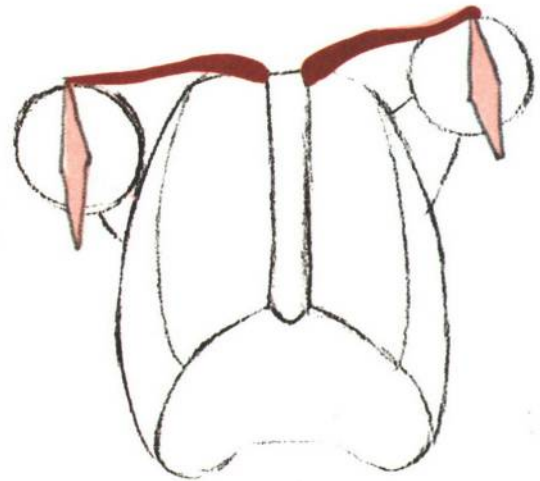
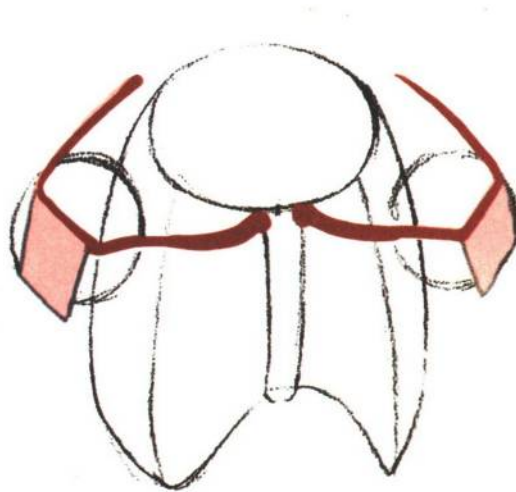
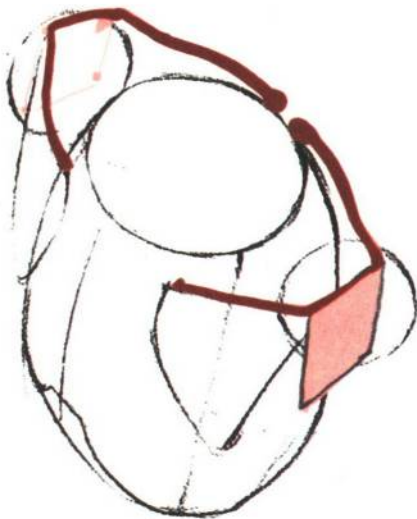
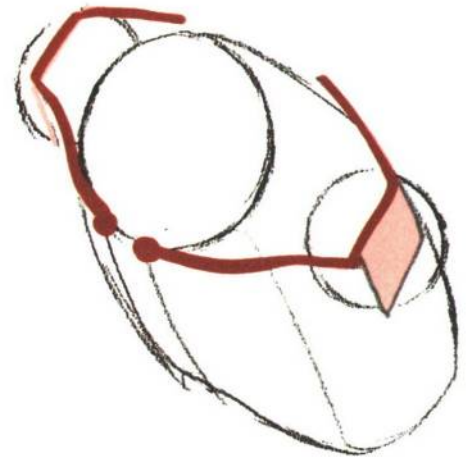
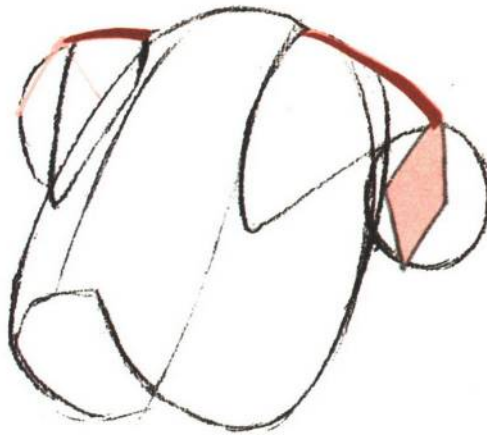
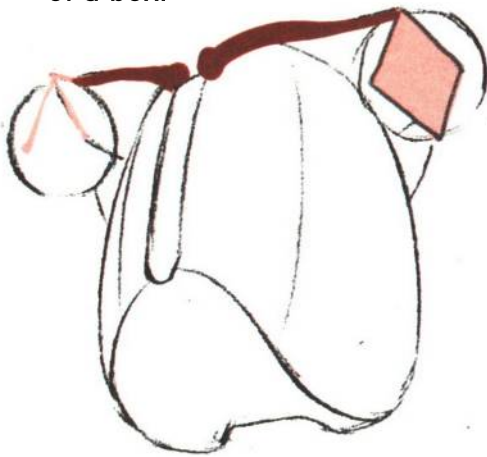
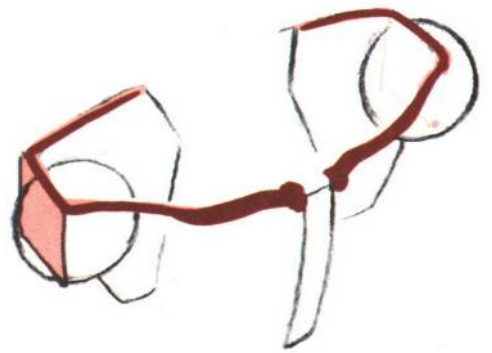
The structure of the shoulder can be thought of as a clamp that holds the chest cavity and swings it around. The key to modeling the clamp is to show the thickness of the side of the clamp, which varies as the clamp moves. When the clip moves, the thickness of its sides will vary. By expressing the thickness of the sides well, you can accurately express the movement of the shoulders in all directions.



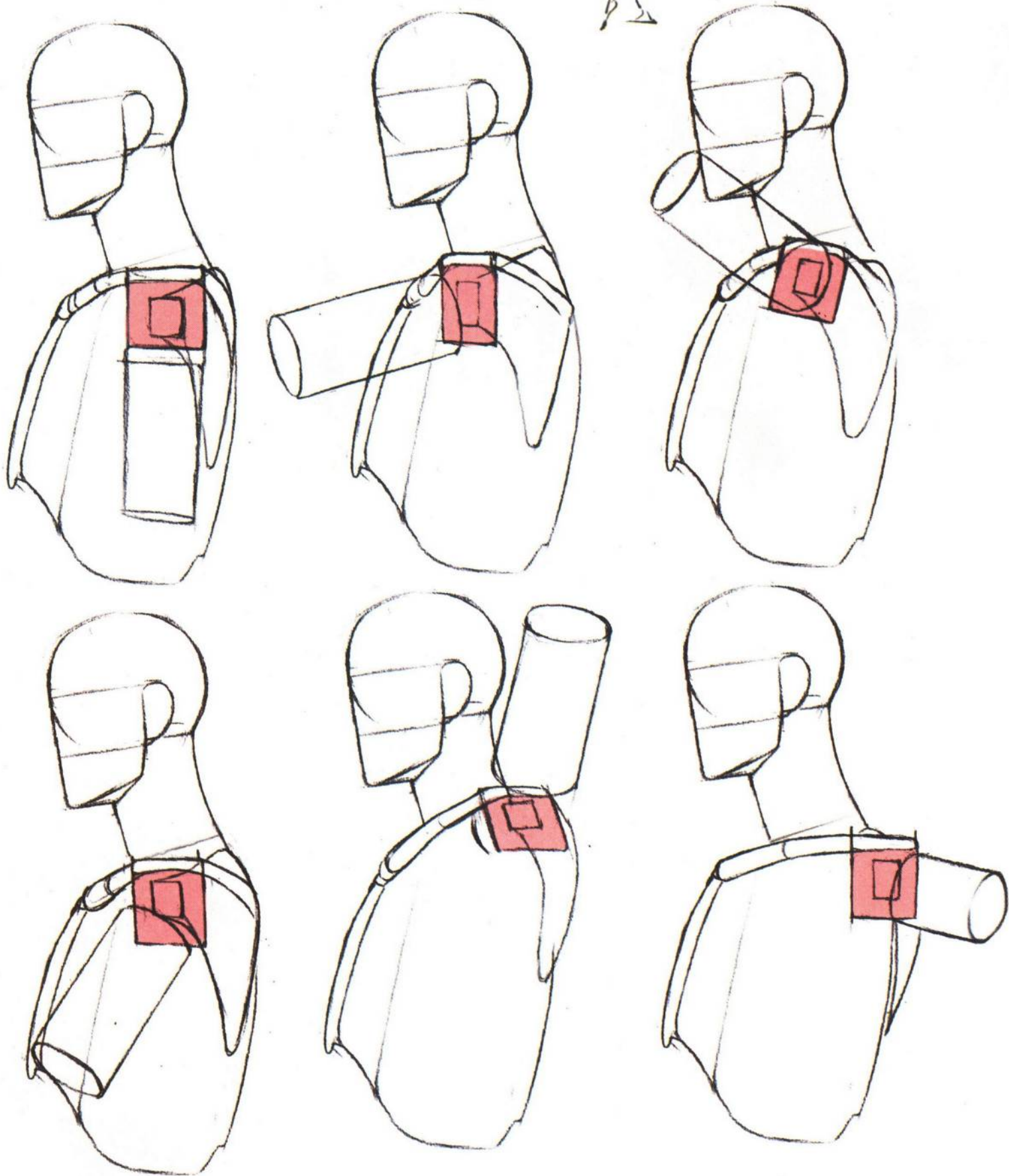
In order to make it easier to draw, we can consider the shoulder as a flat shape. When the shoulder moves, its corresponding flat shape will be deformed, which is the key point to express the spatial relationship of the shoulder. This is the key point to show the spatial relationship of the shoulder. Only when the perspective of the shoulder is reasonable, we can draw the movement of the upper arm correctly.



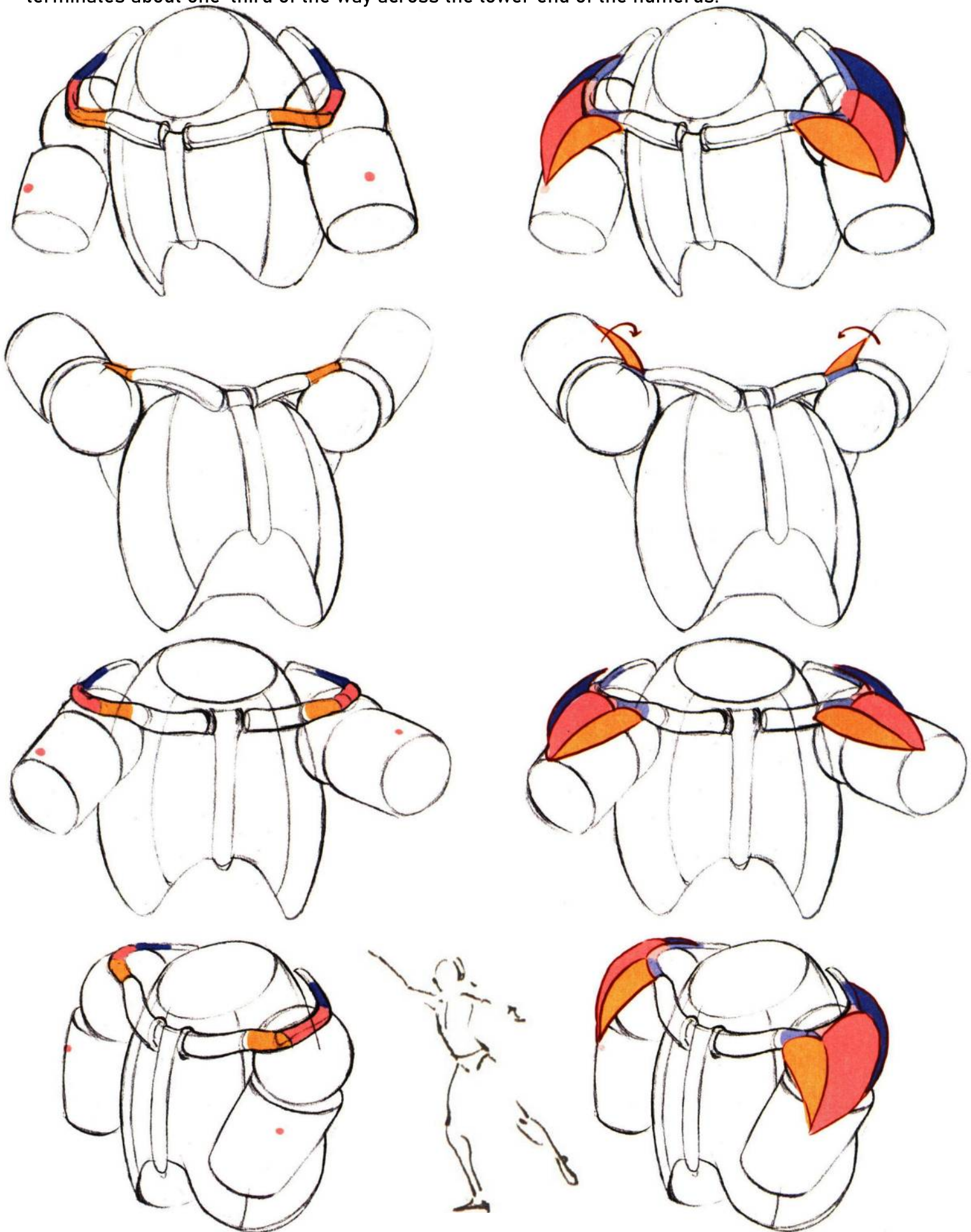
The movement of the shoulder creates changes in the interface between the arm and the shoulder, and it is important to deal with these changes in order to create a sense of three-dimensional space in the shoulder. It is not enough to use a sphere to represent the volume of the starting point of the arm. By adding a quadrilateral face to the side of the shoulder, the structure of the shoulder and the arm is similar to a box, and the 3D spatial effect of the shoulder is better reflected by utilizing the sense of volume of a box.



By combining the above knowledge, we can summarize what happens to the shoulder when a real human arm moves, and then draw these changes.

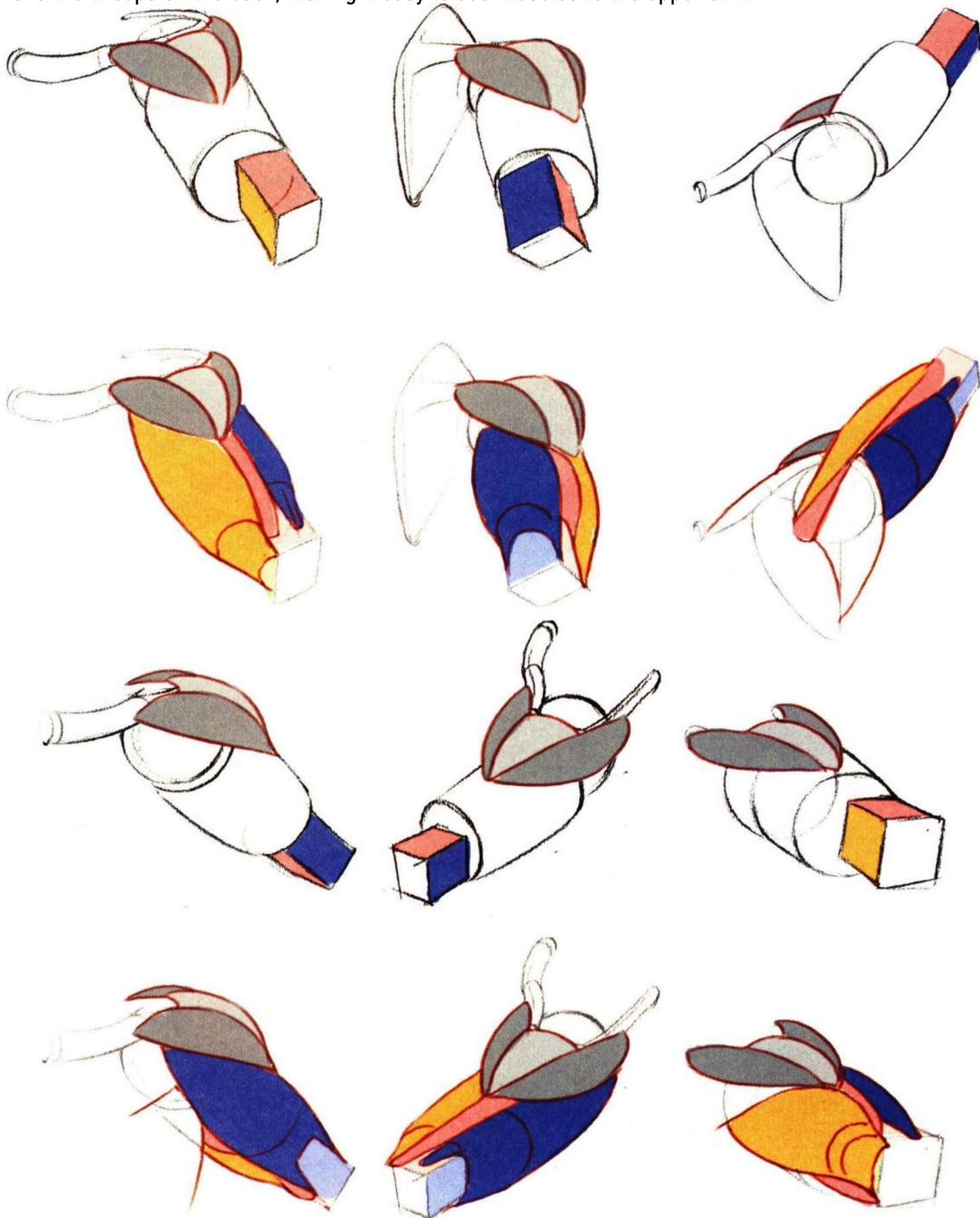


Next, draw the deltoid muscle, which is divided into anterior, middle, and posterior portions connecting the clavicle to the anterior, middle, and posterior turns of the scapula, and which terminates about one-third of the way across the lower end of the humerus.



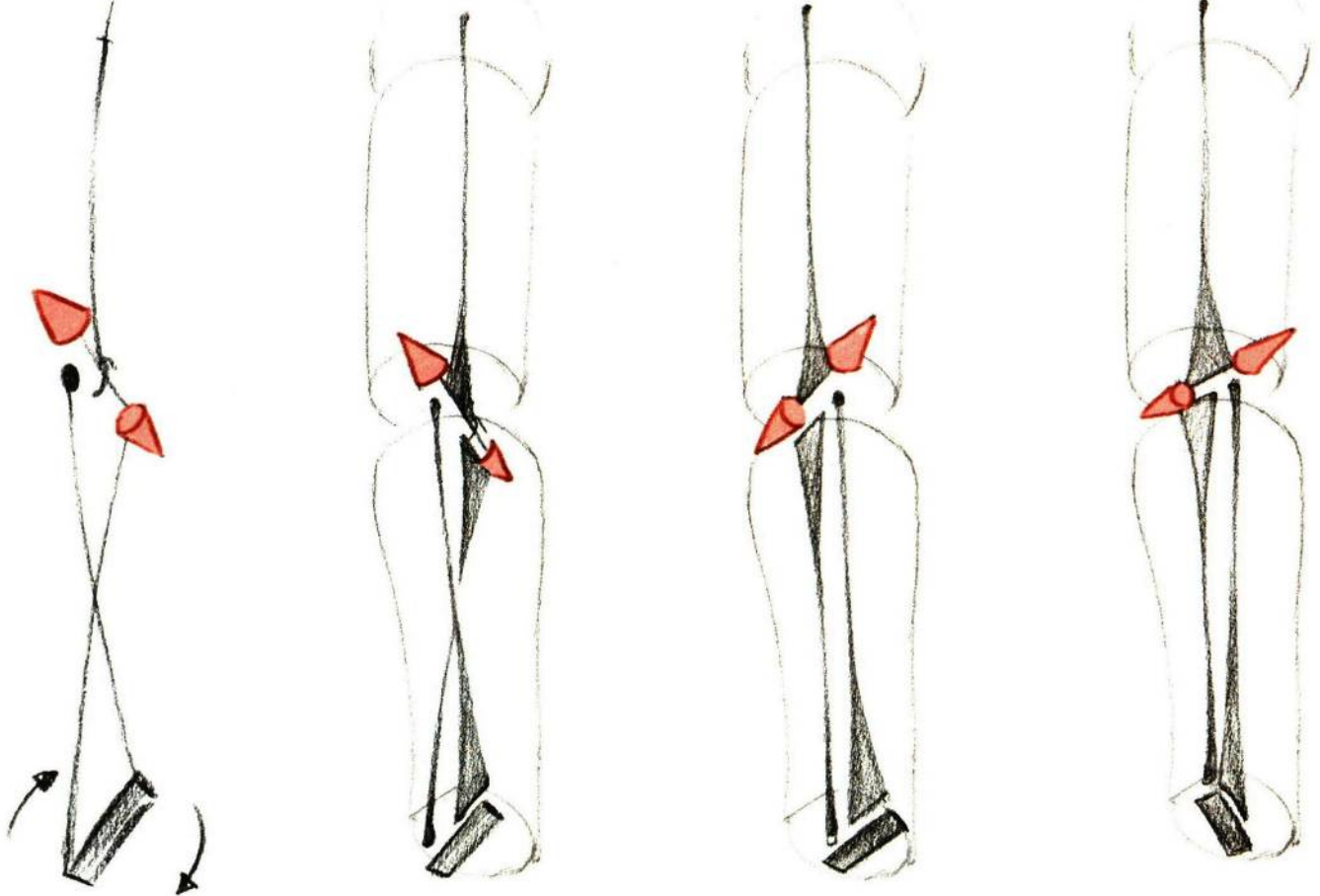
03 Bones and muscles of the upper arm

For ease of drawing, we consider part of the humerus as a cube, with yellow, red, and blue representing the front, side, and back of the cube, respectively. Adding muscles is also based on the front, side, and back of the cube, with the biceps on the front of the cube, the brachialis on the side, and the triceps on the back, making it easy to add muscles to the upper arm.

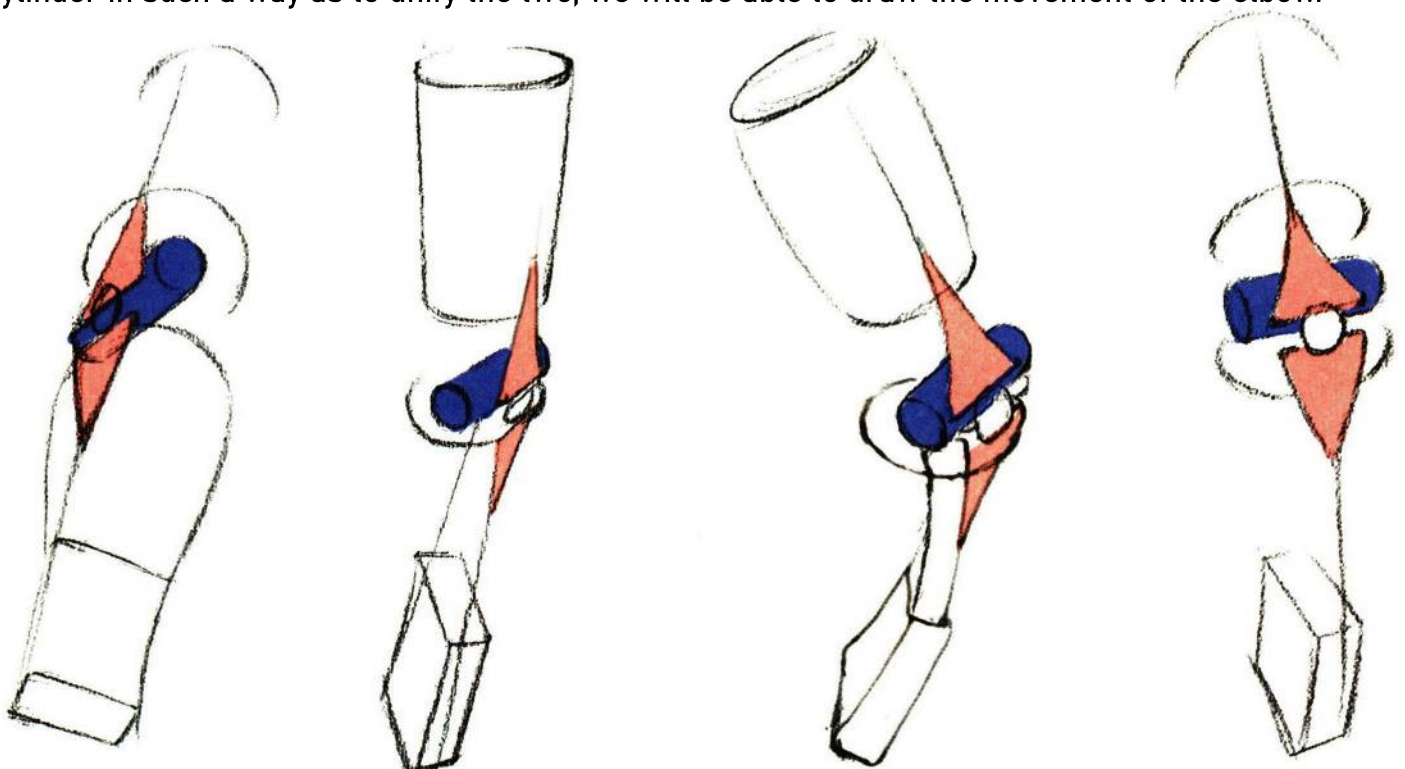


04 Structure of the elbow

As the arm rotates, the skeleton is displaced, and this displacement causes the muscles on the surface of the arm to deform, so it is important to understand the state of rotation of the skeleton before showing the relationship of the muscles.

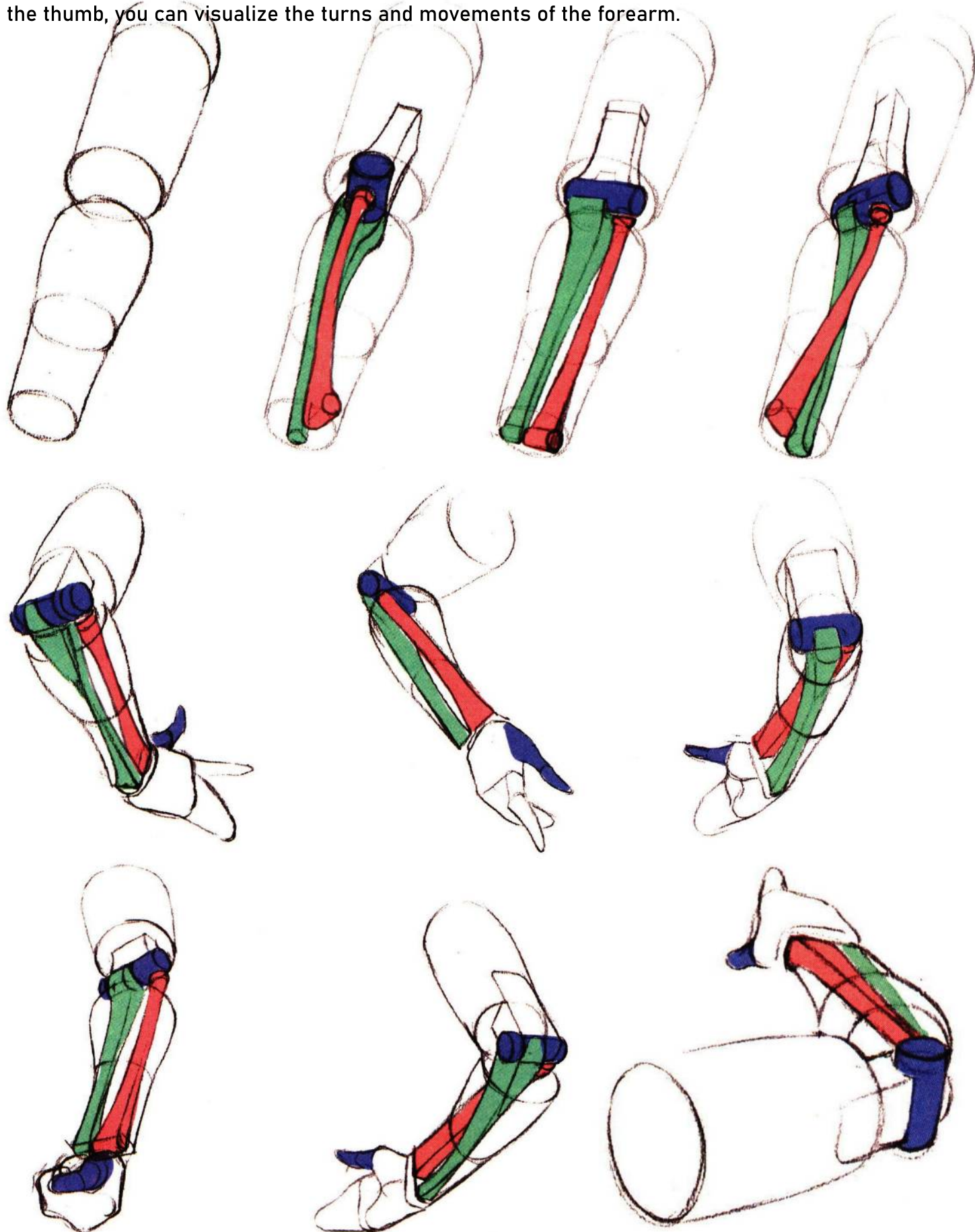


One of the keys to drawing a rotating arm is to represent the elbow joint, which can be viewed as a combination of a triangle and a cylinder, both of which change according to the angle of rotation of the arm. By analyzing the perspective of the cylinder, and placing the triangles on the side of the cylinder in such a way as to unify the two, we will be able to draw the movement of the elbow.



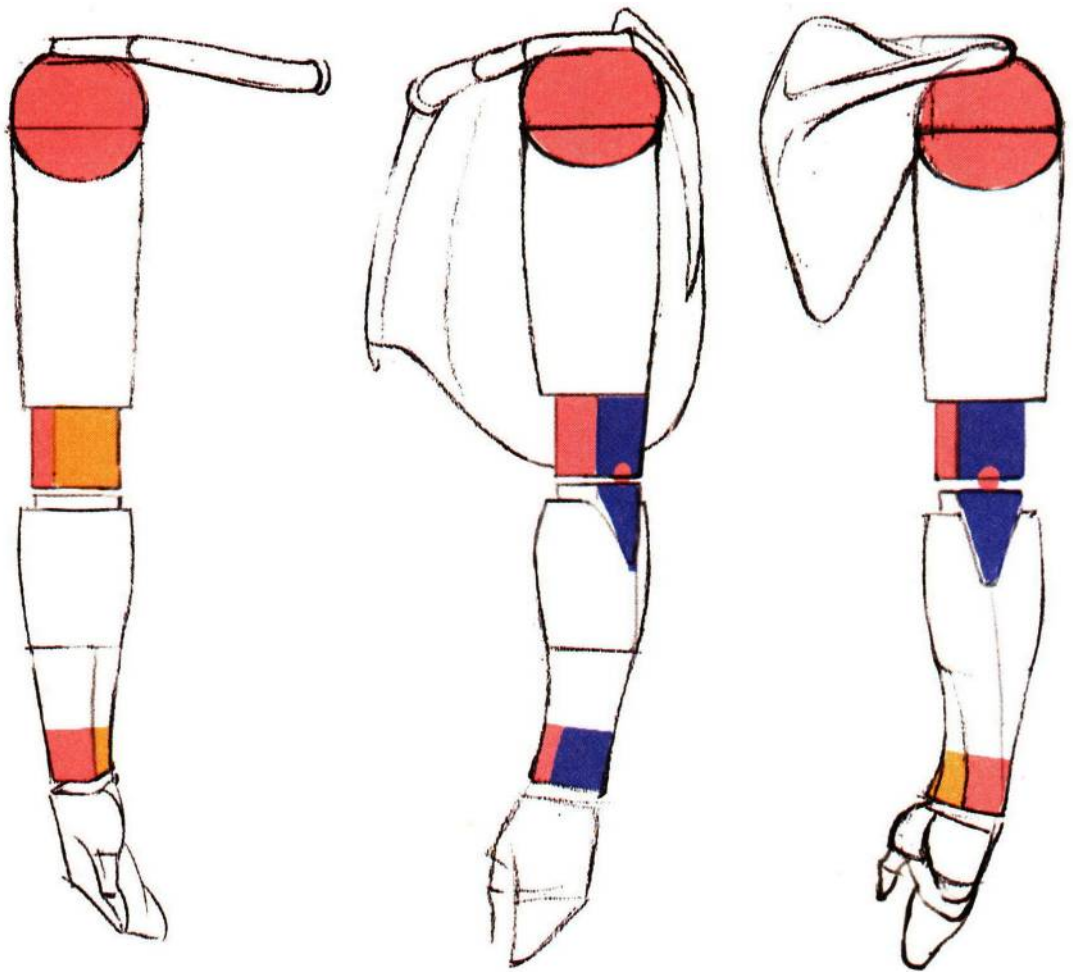
05 Skeletal structure of the forearm

The bones of the forearm consist of the ulna, which is fixed to the humerus, and the radius, which moves and changes in response to twisting of the lower arm. Changes in the radius depend on the position of the thumb. By finding the point where the ulna meets the elbow joint and connecting it to the thumb, you can visualize the turns and movements of the forearm.

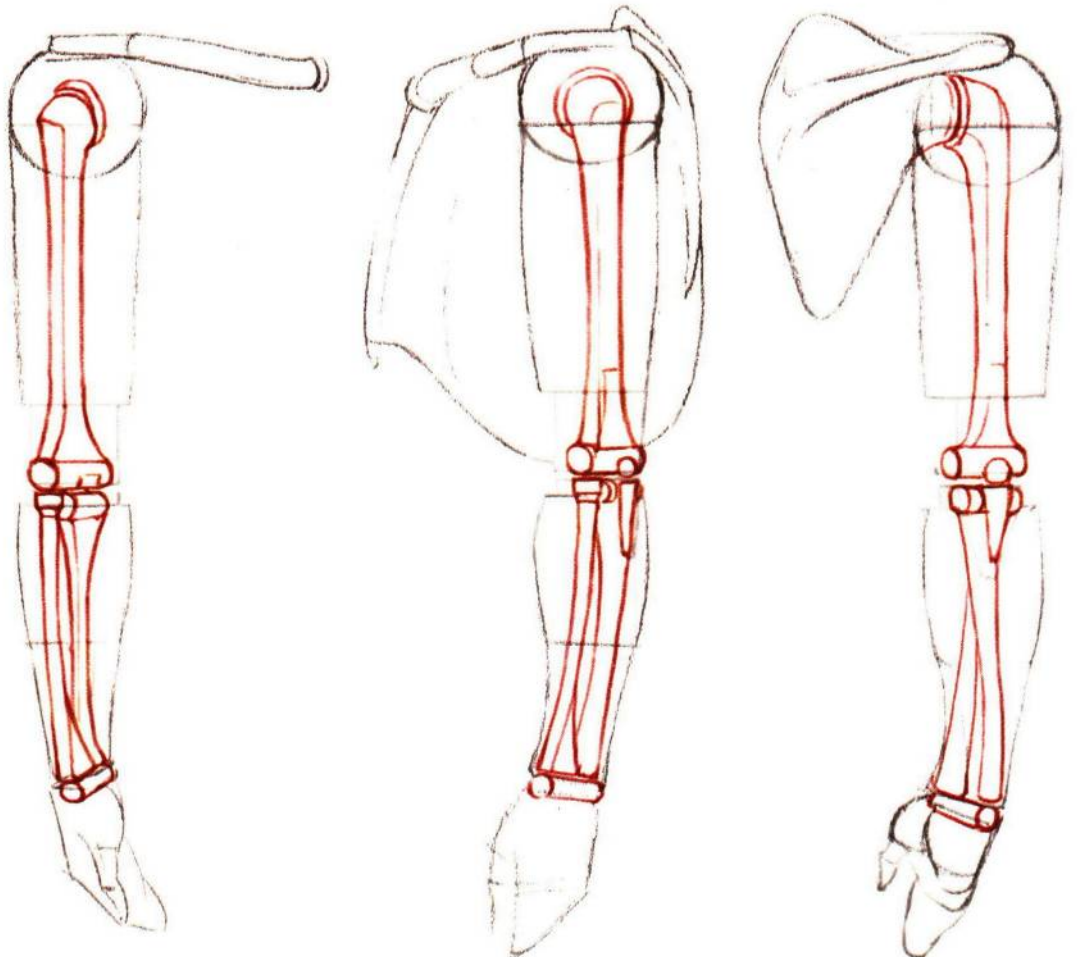


06 Points for drawing the arm structure

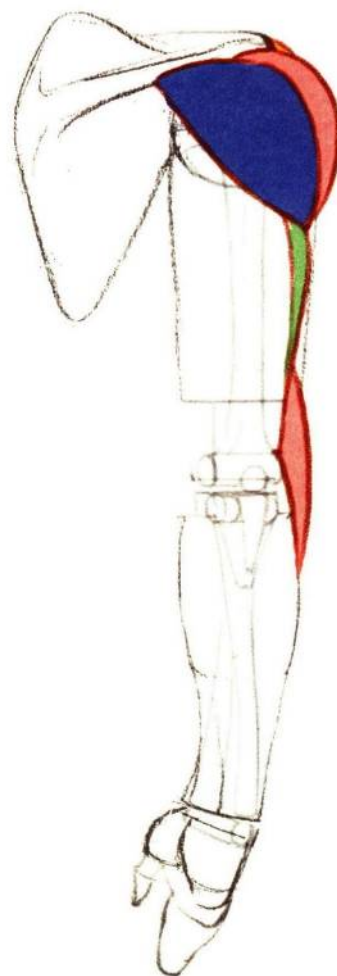
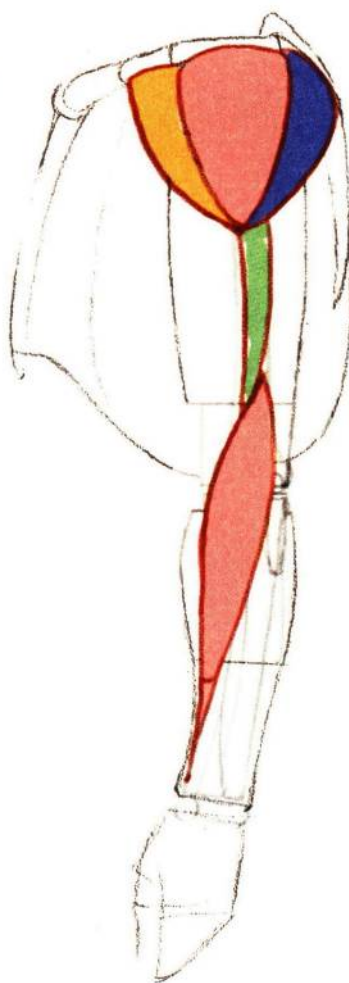
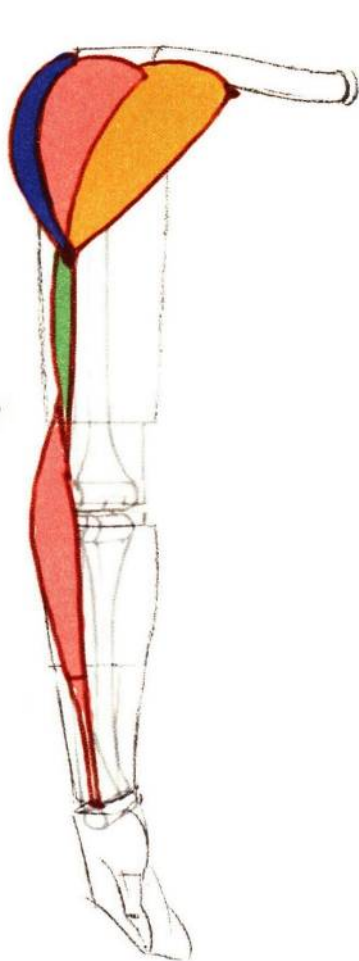
In order to familiarize ourselves with the arm structure as soon as possible, we can practice in stages. First of all, we should master the geometry of the arm, and explain the spatial relationship of the arm with simple geometries by treating the arm as cylinders and cubes.



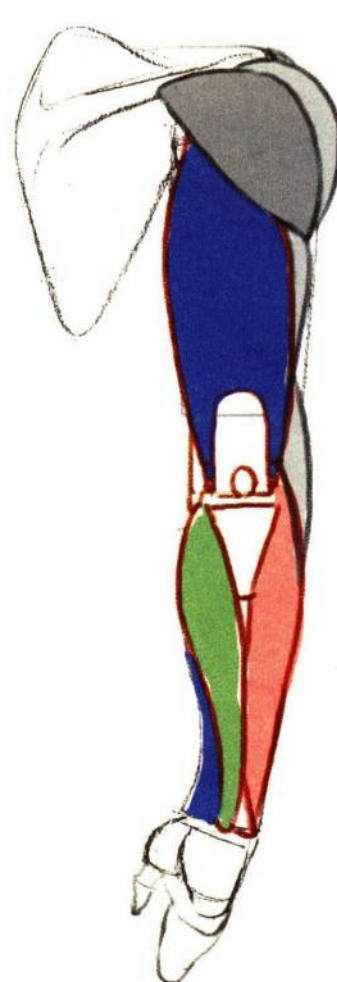
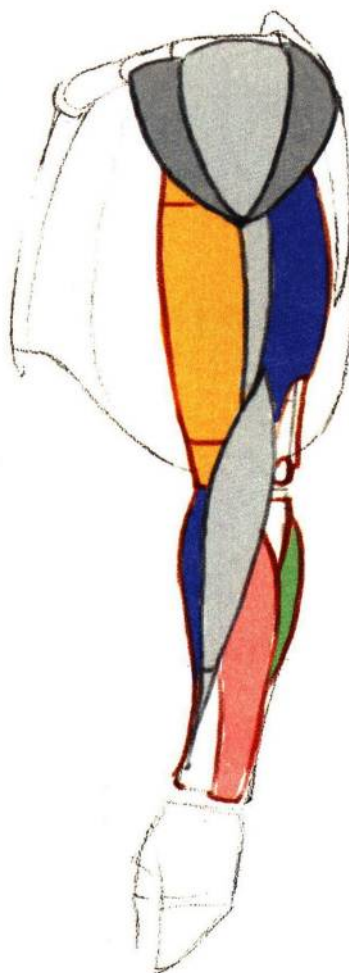
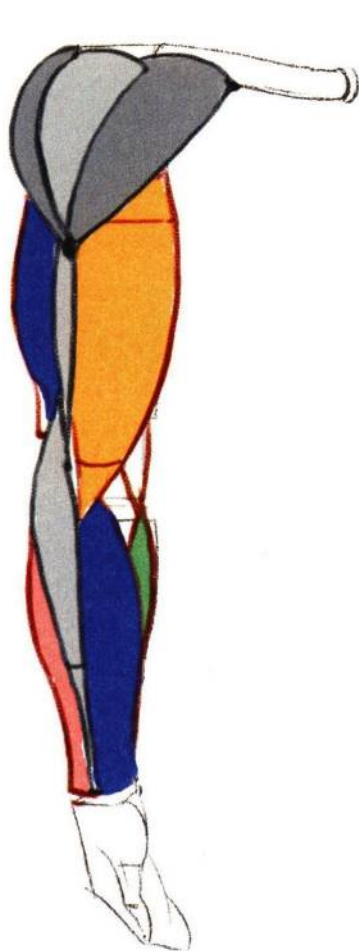
Once we know the spatial relationship of the arm, we will learn about the skeleton of the arm, focusing on the changes in the elbow and wrist joints when they move.

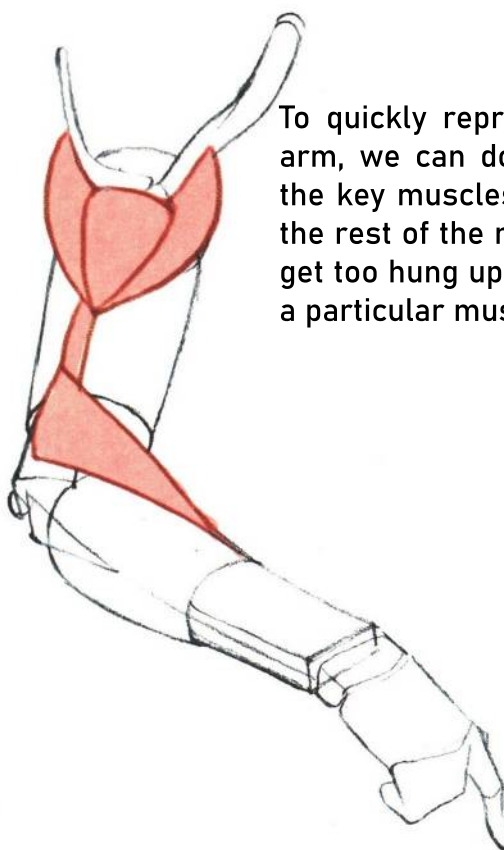
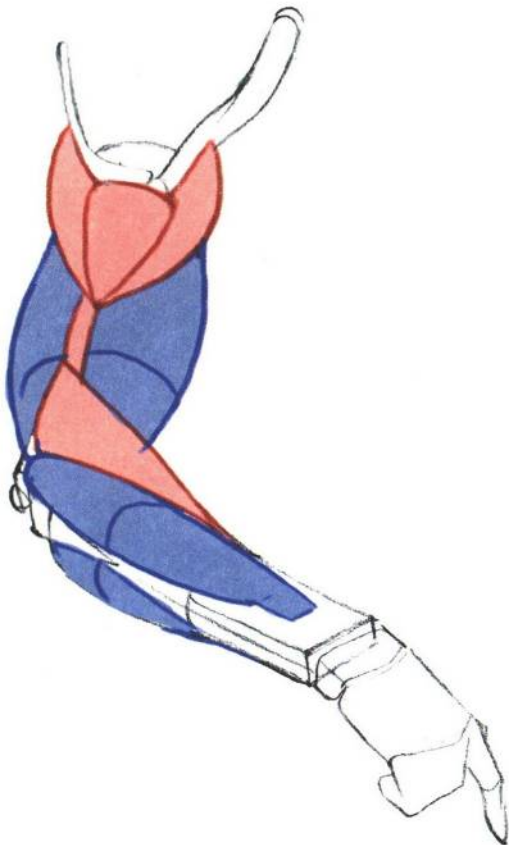
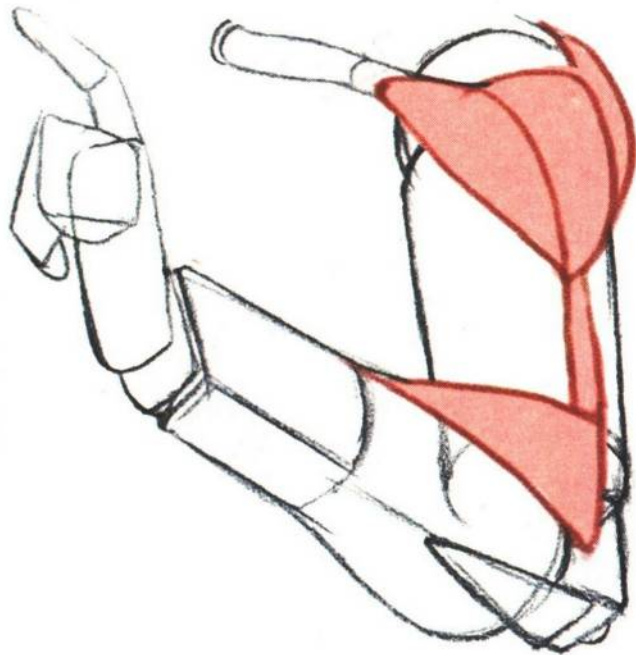
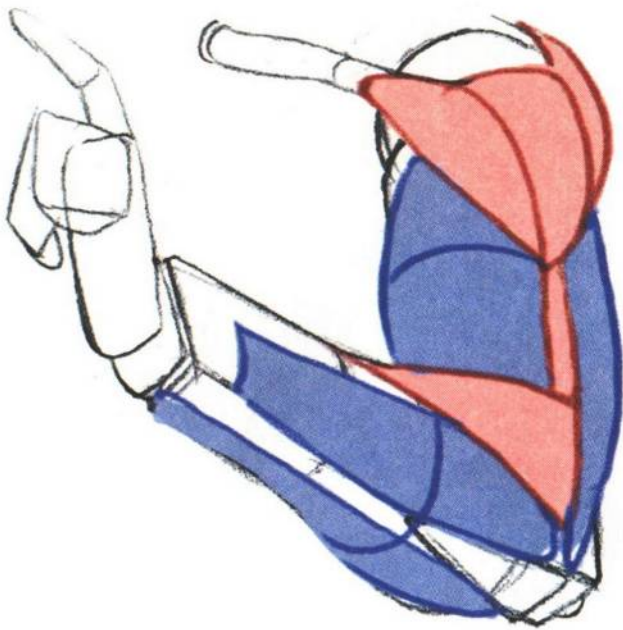
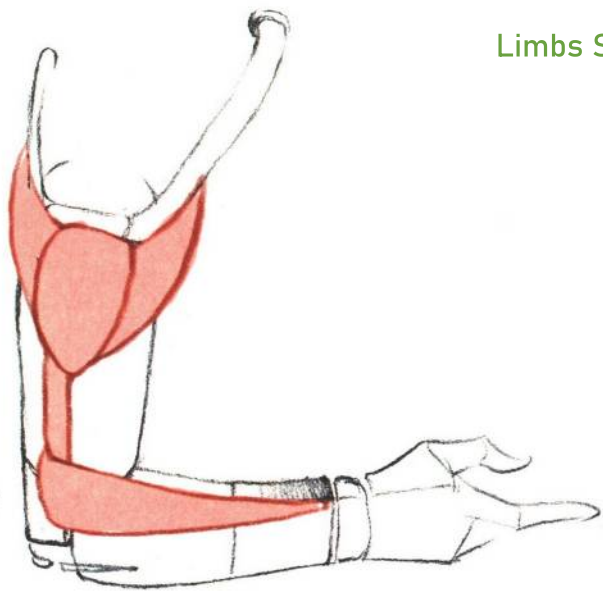
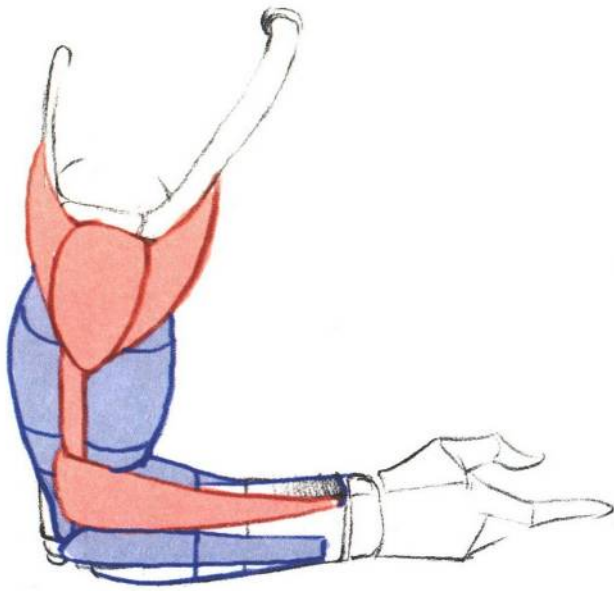


The next step is to add the muscles. After emphasizing the deltoid, brachialis and brachioradialis, it will be easy to add the other muscles.

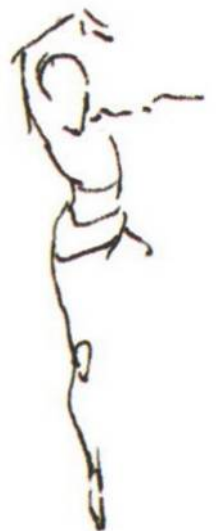


The way to add the rest of the arm muscles is to stack them on top of the previous three, which makes it easy, fast and effective to draw the structure of the arm muscles.

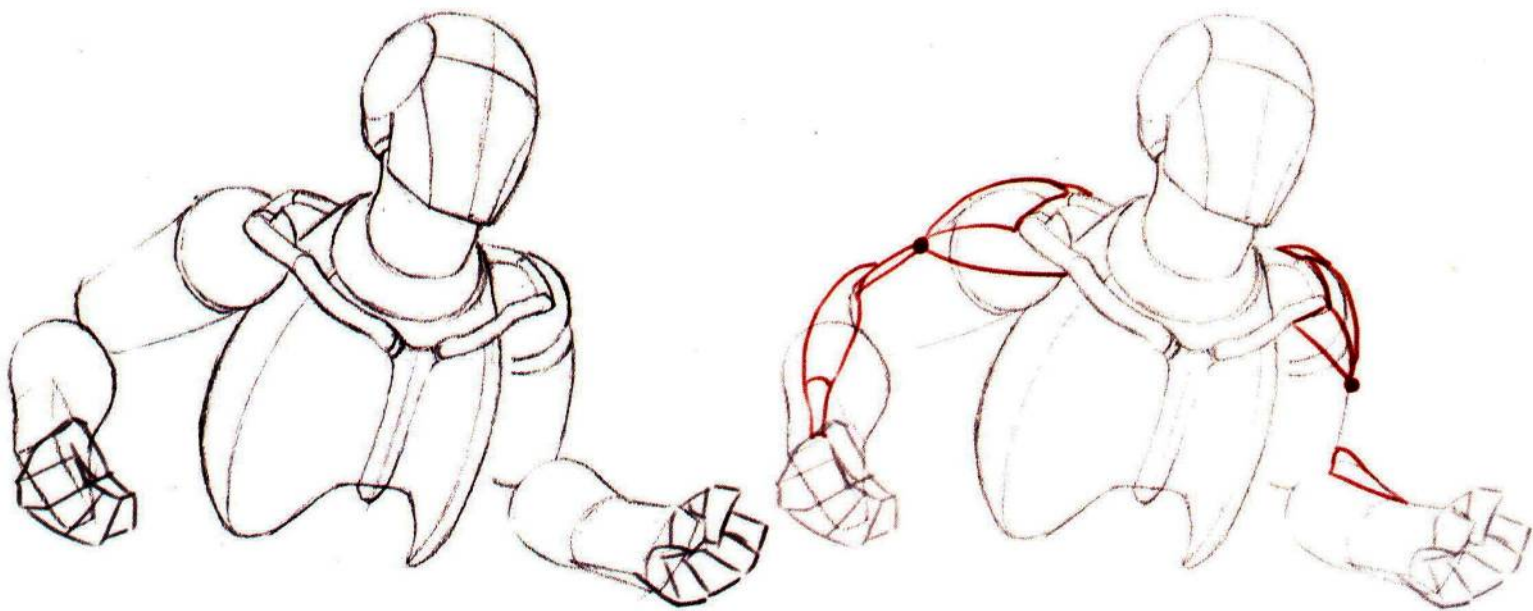




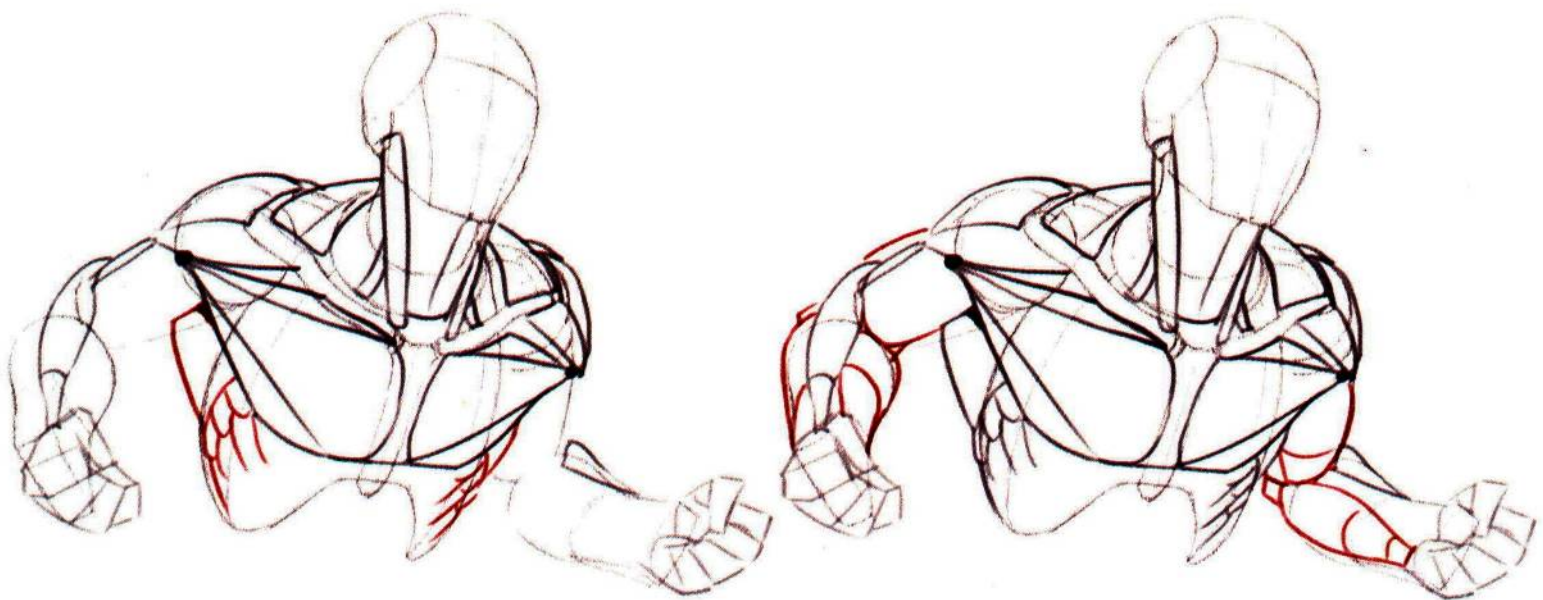
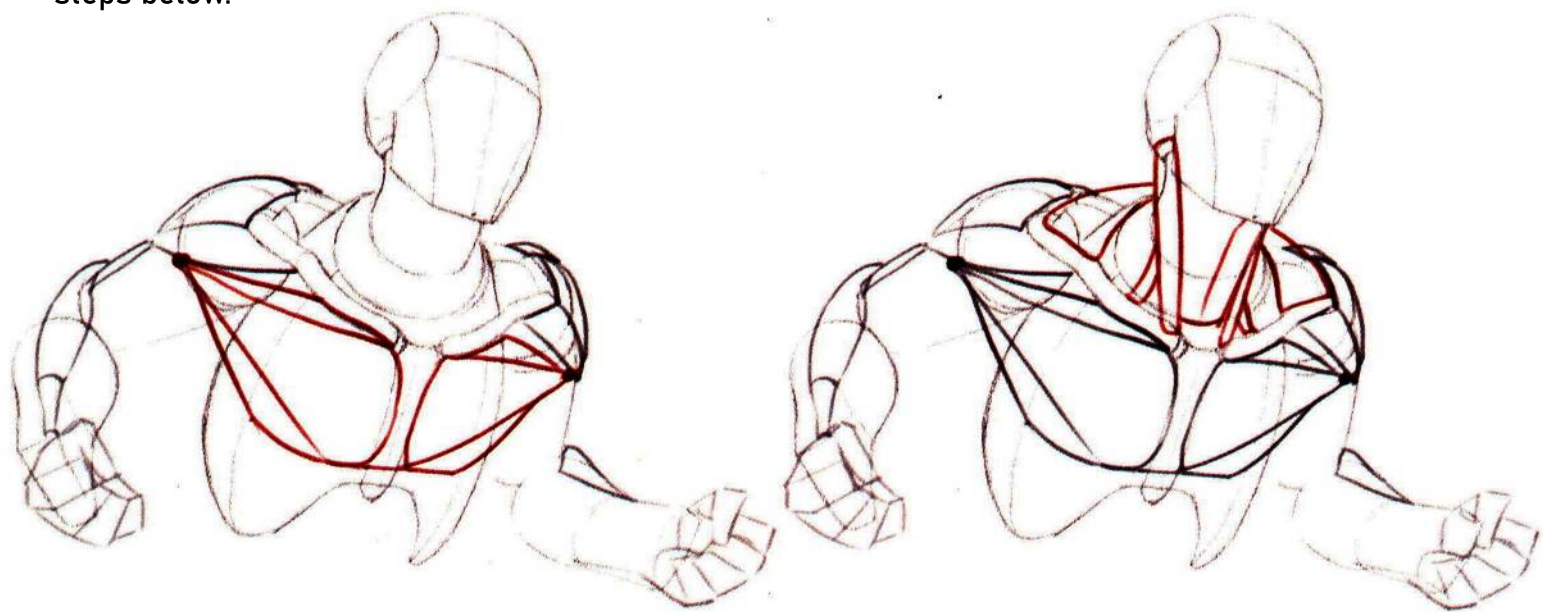
To quickly represent the muscles of the arm, we can do this exercise: first draw the key muscles of the arm and then add the rest of the muscles. This way we don't get too hung up on the exact movement of a particular muscle.



07 Arm Drawing Exercise

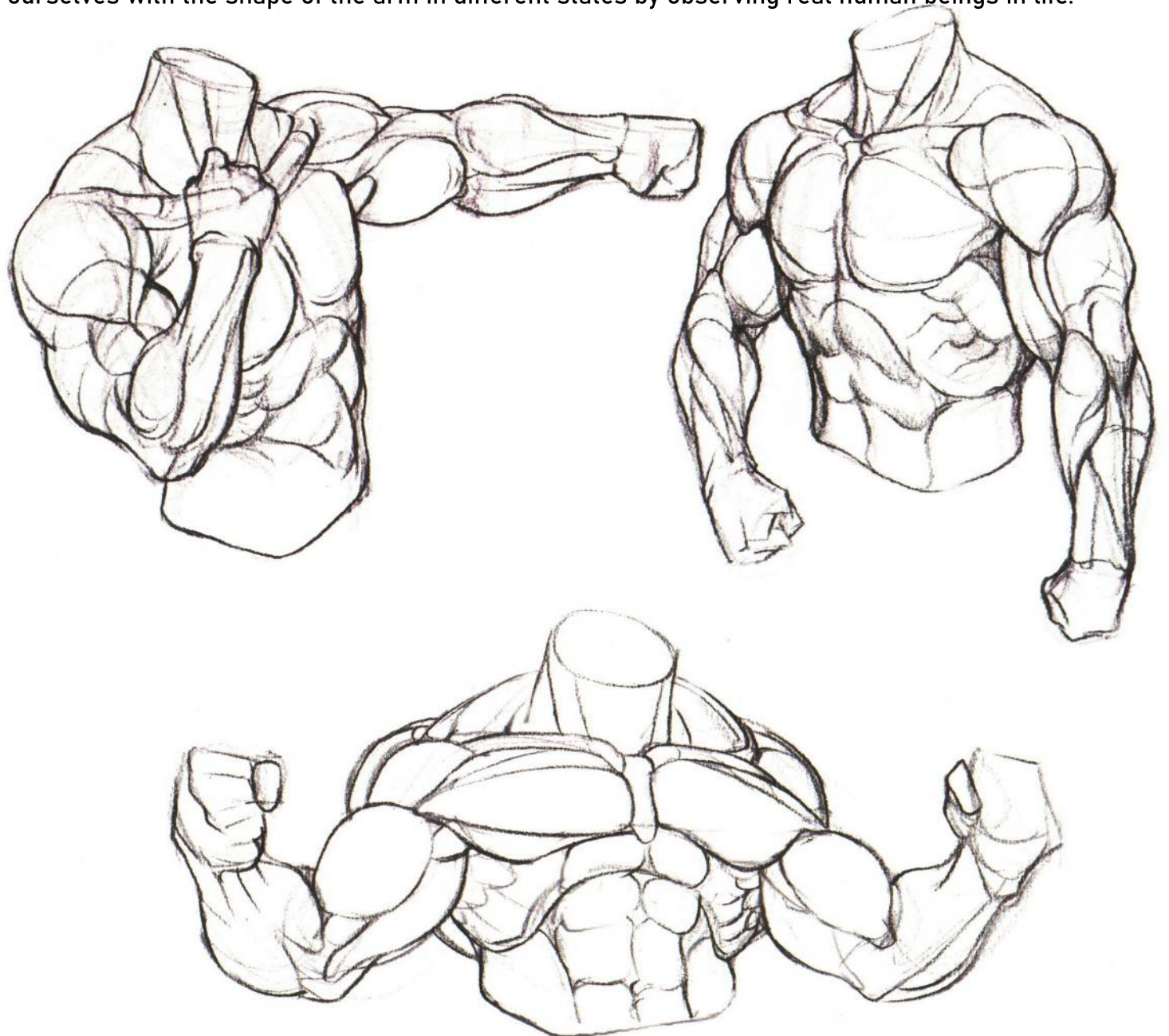


To do the arm drawing exercise, we can do the upper body drawing step by step by following the steps below.



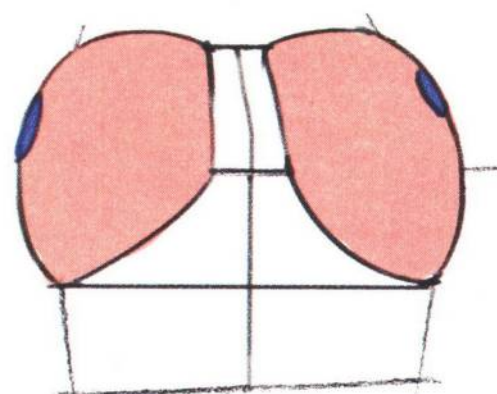
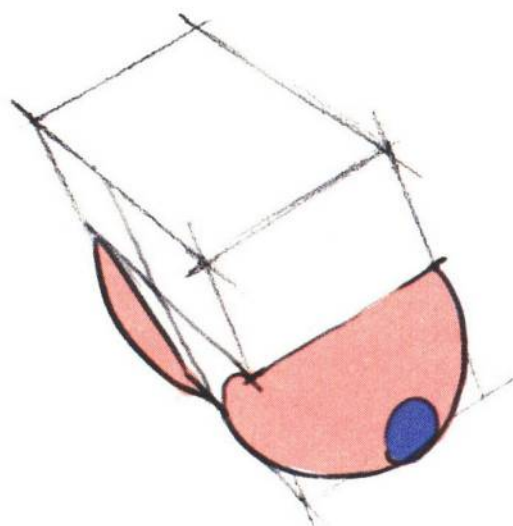
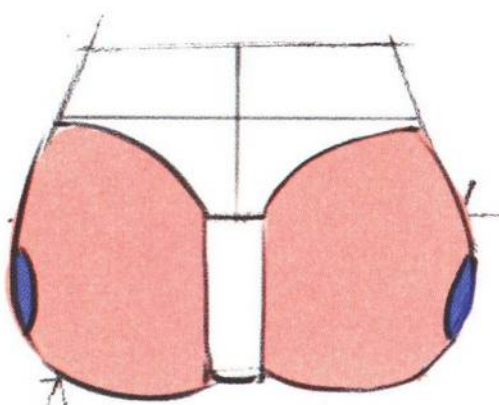
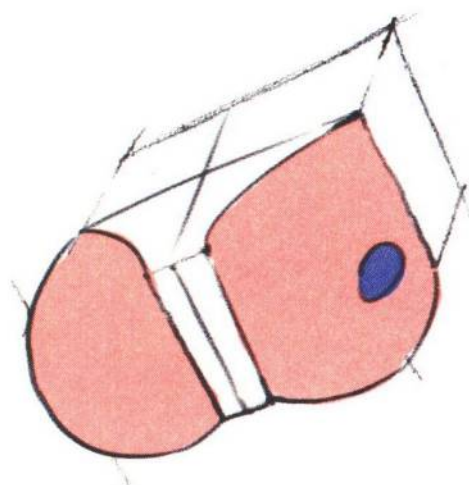
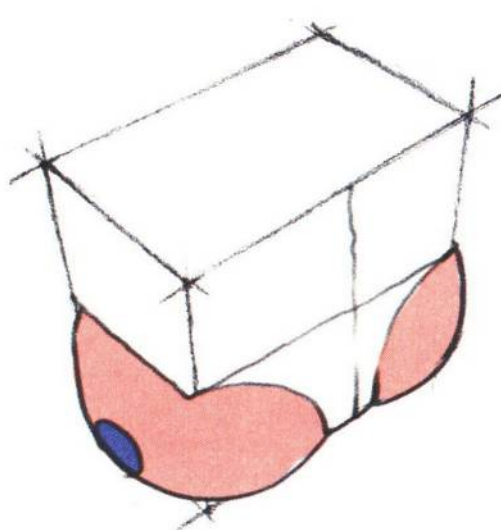
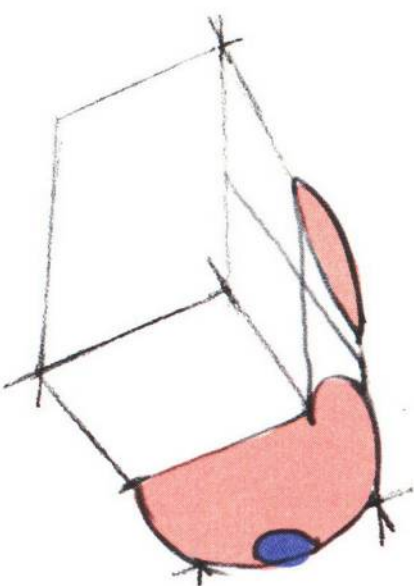
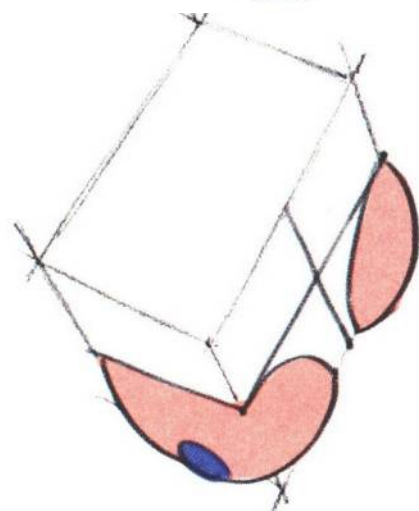
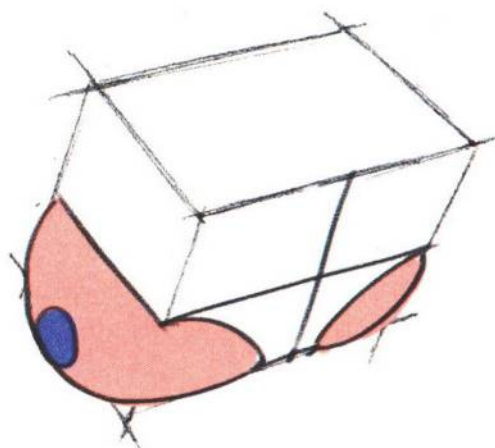
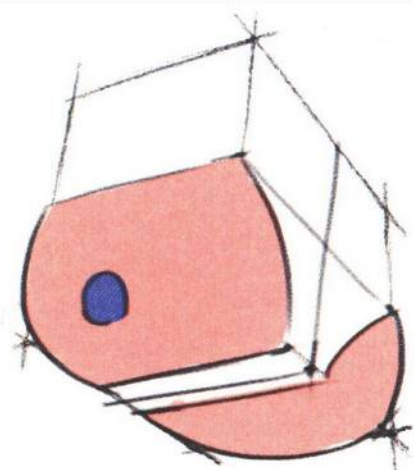
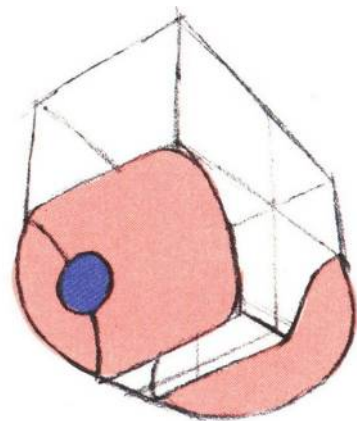


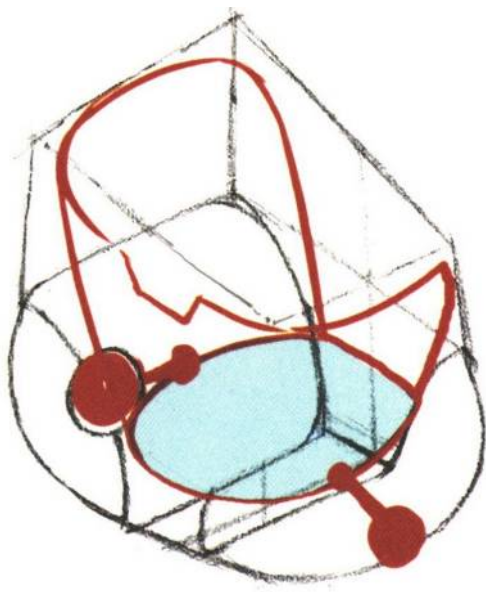
In order to quickly grasp the structure of the arm in the upper body, it is best to familiarize ourselves with the shape of the arm in different states by observing real human beings in life.



08 Hips and lower limbs

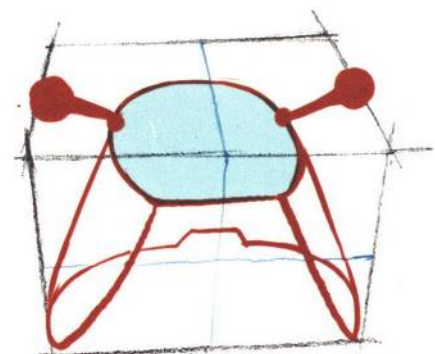
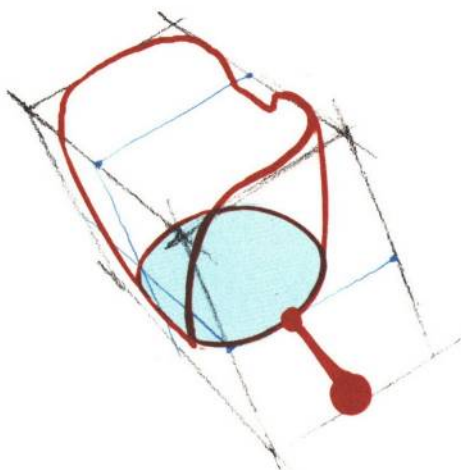
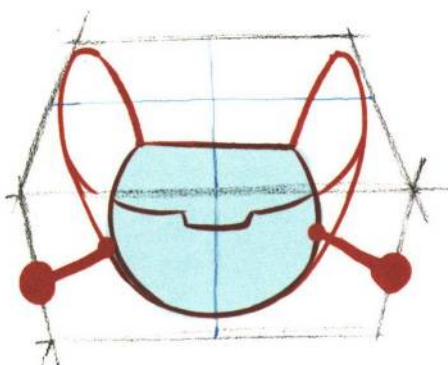
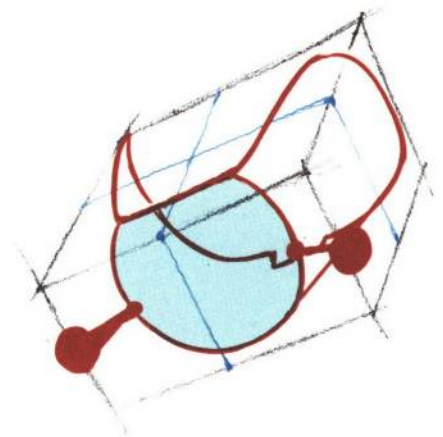
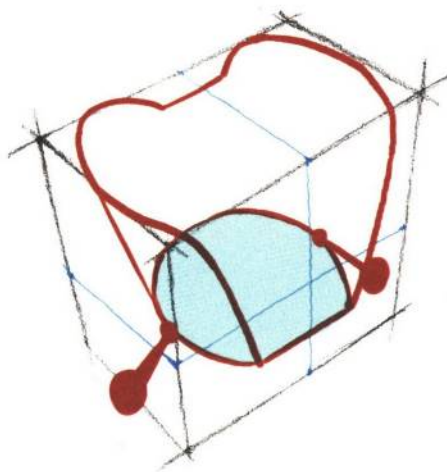
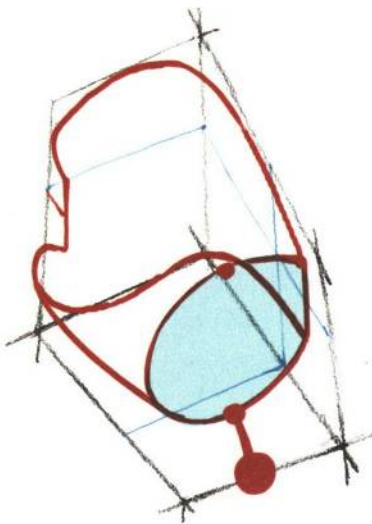
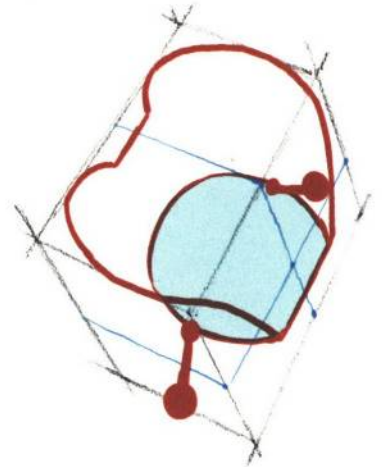
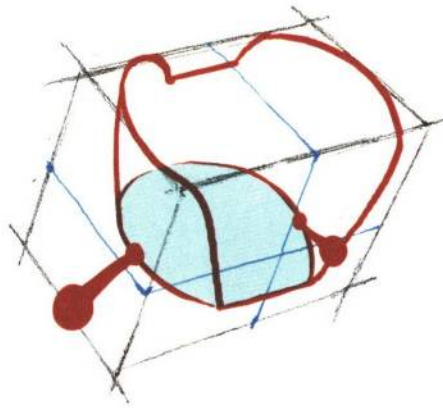
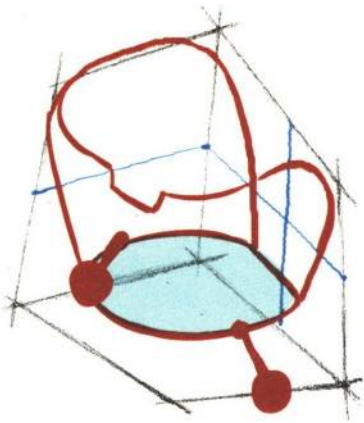
Before drawing the structure of the greater trochanter, we can first draw the cube with different orientations, and fill the cube with two spheres representing the root of the thighs, with the greater trochanter roughly one-half of the sphere at the bottom of the side of the cube.





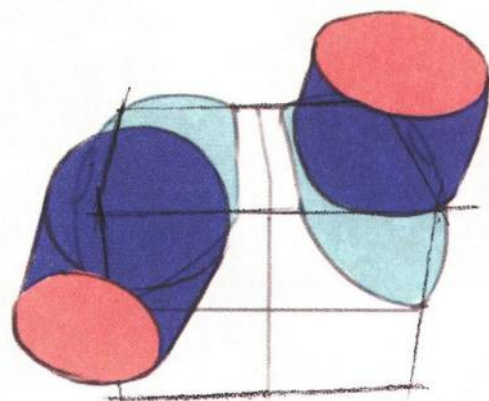
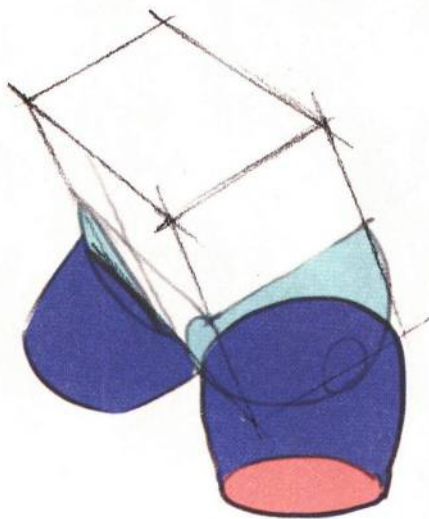
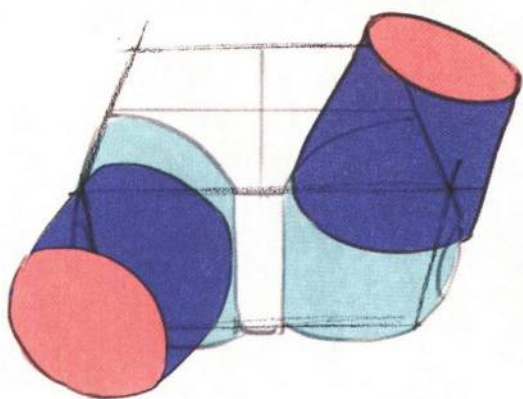
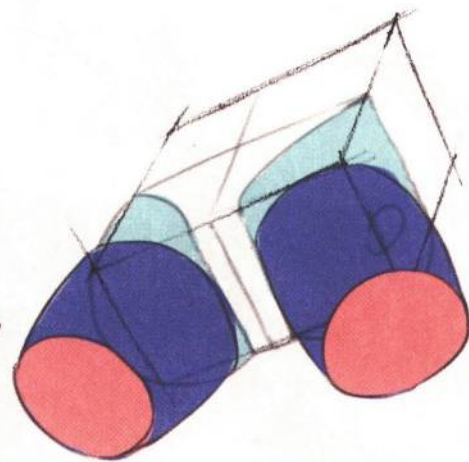
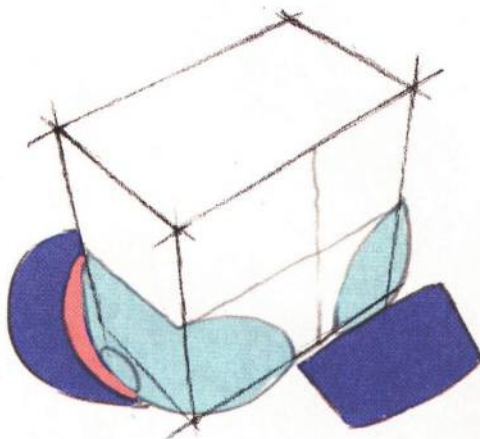
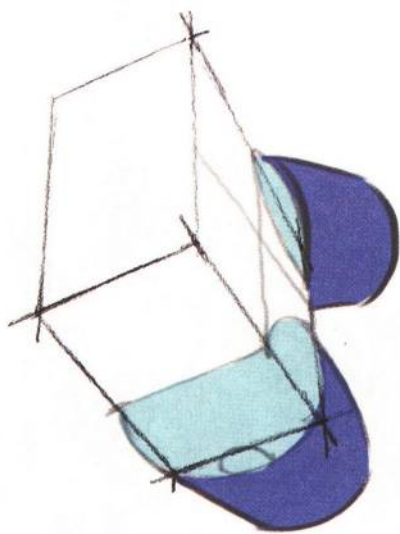
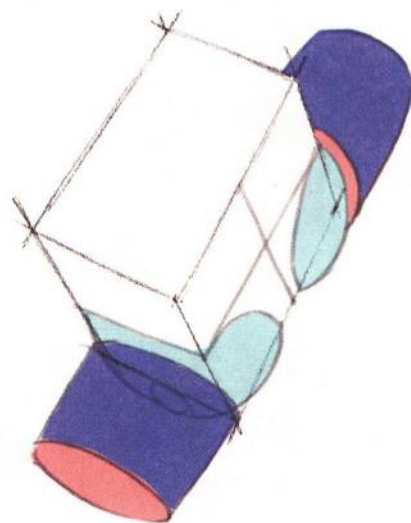
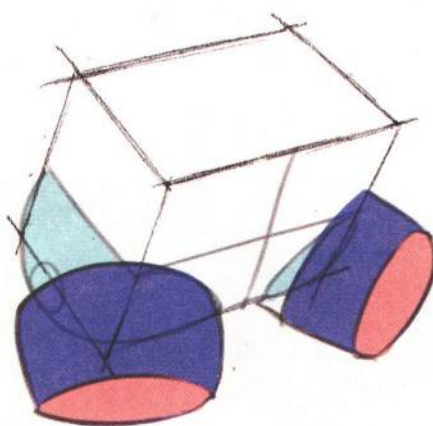
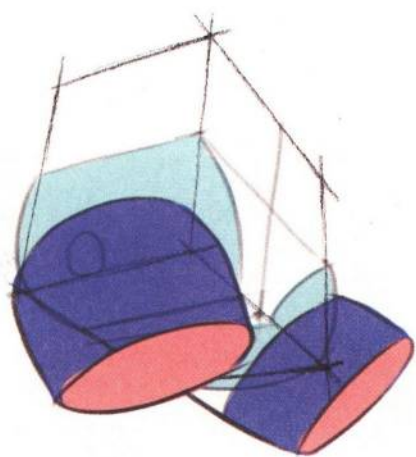
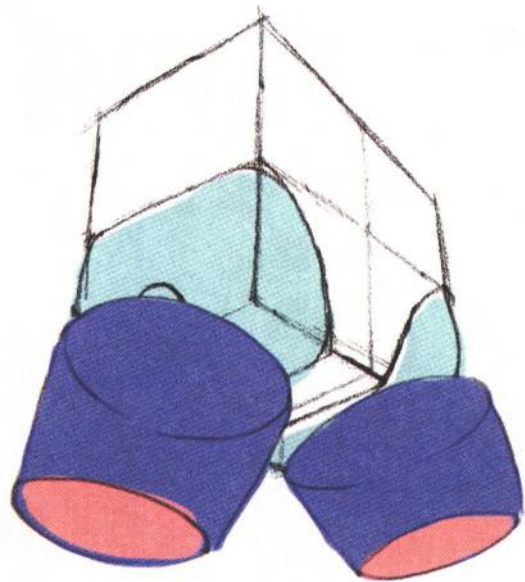
The structure of the pelvis is relatively complex. When drawing it, we can find the position of the pubic bone on the cube, then draw the bottom of the pelvis on the basis of the pubic bone, then draw the undulation of the patella at the top of the cube, and finally connect all the parts, and then we can get a pelvic-like structure.

The most difficult part of drawing the pelvis is to control the perspective of the entire cube.



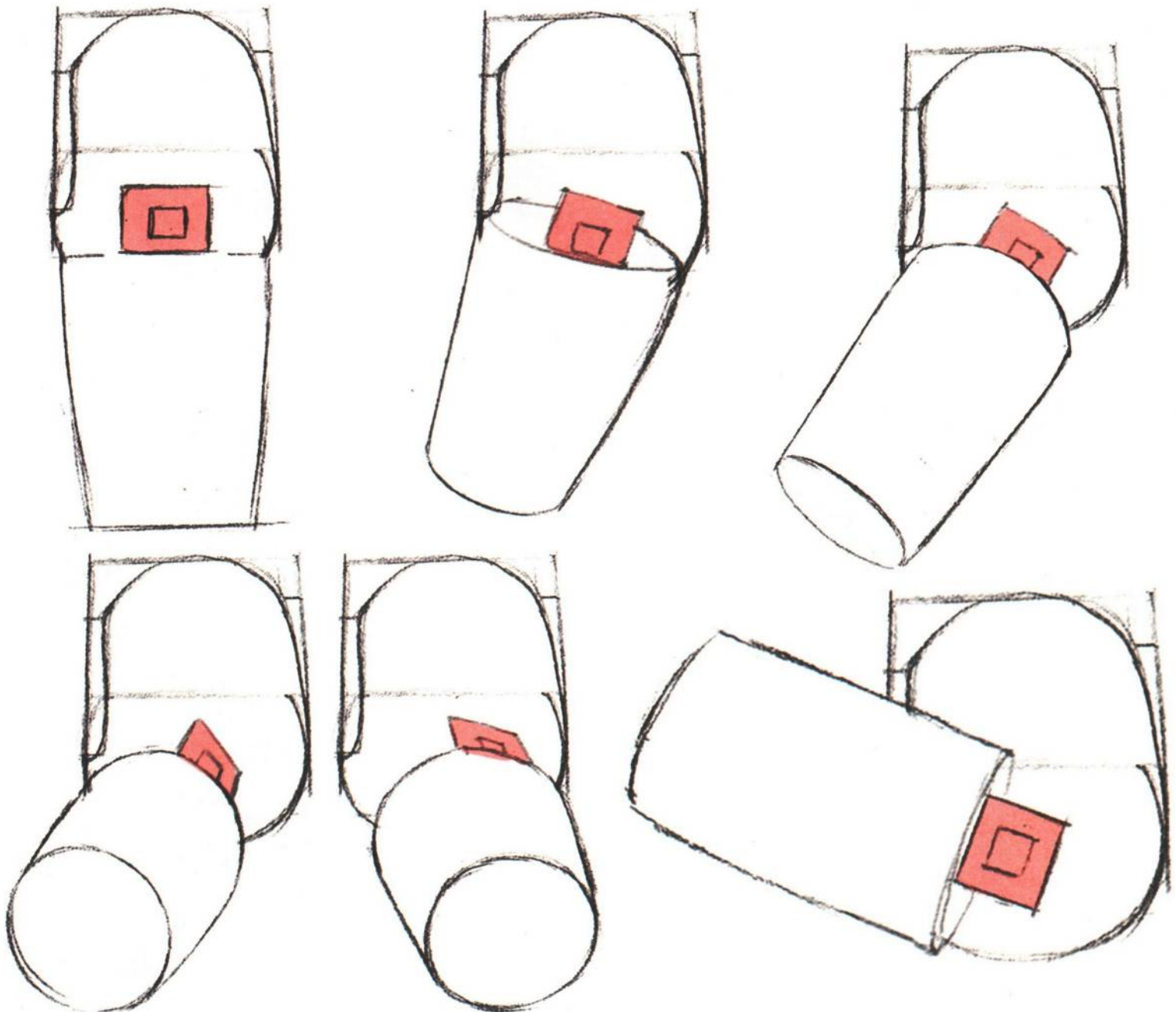
Knowing the position of the greater trochanter and the spatial relationship of the pelvis, we can then determine the spatial relationship between the thigh and the greater trochanter.

The perspective of the cylinder representing the thigh must be clearly shown, which is very important for us to draw a reasonable lower limb.



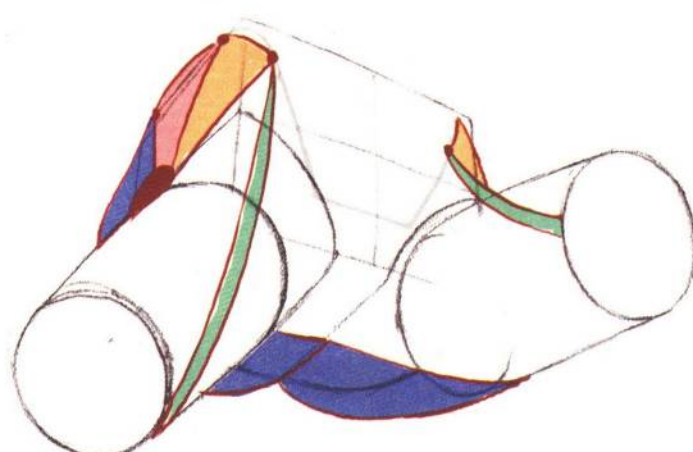
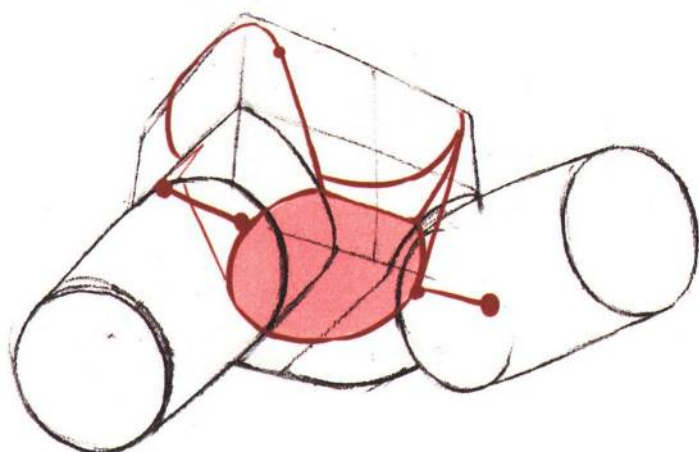
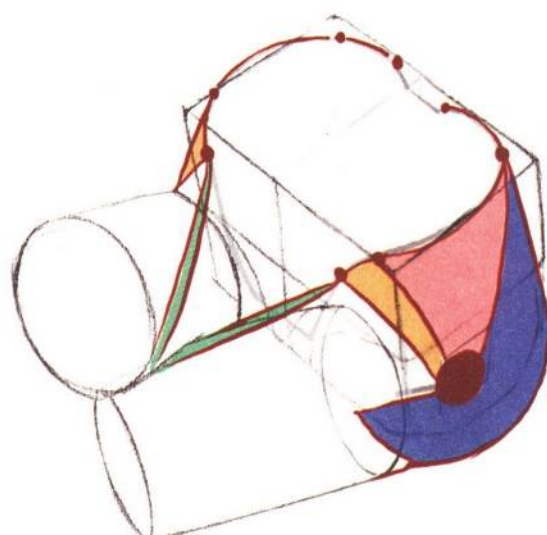
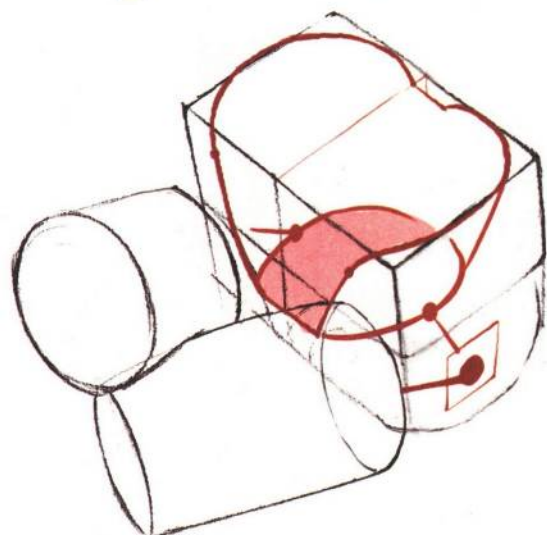
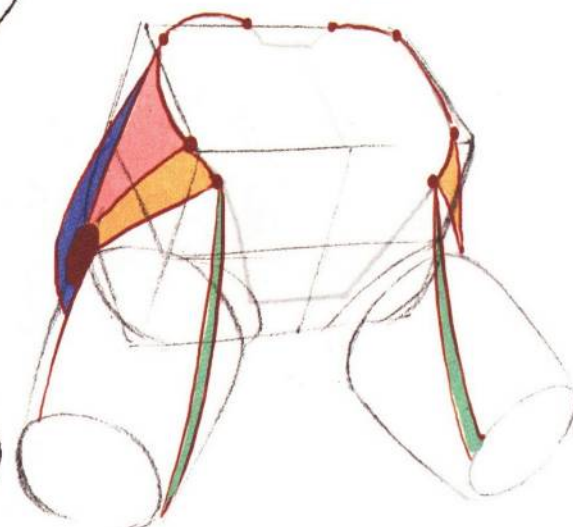
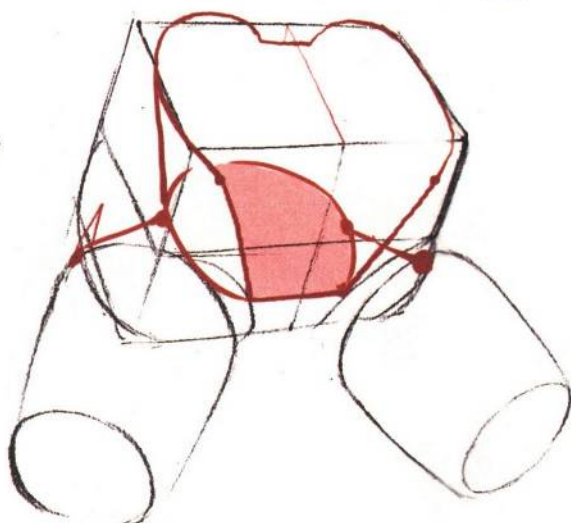
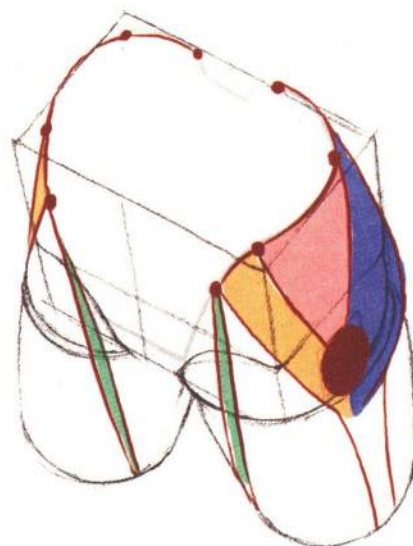
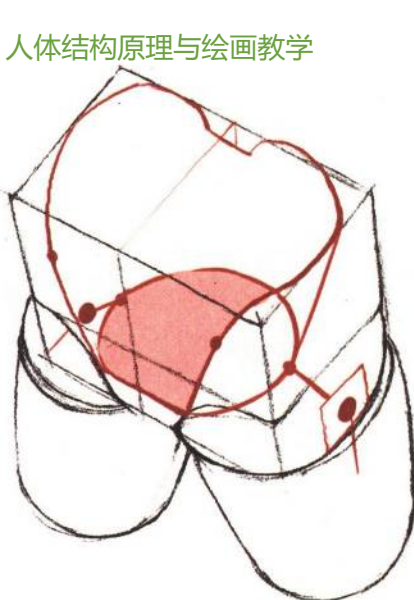


The position of the greater trochanter remains basically unchanged during the leg movement, but the twist on its face changes when the leg moves in different directions. As can be seen in the figure, the square representing the greater trochanter changes as a result of leg movement.



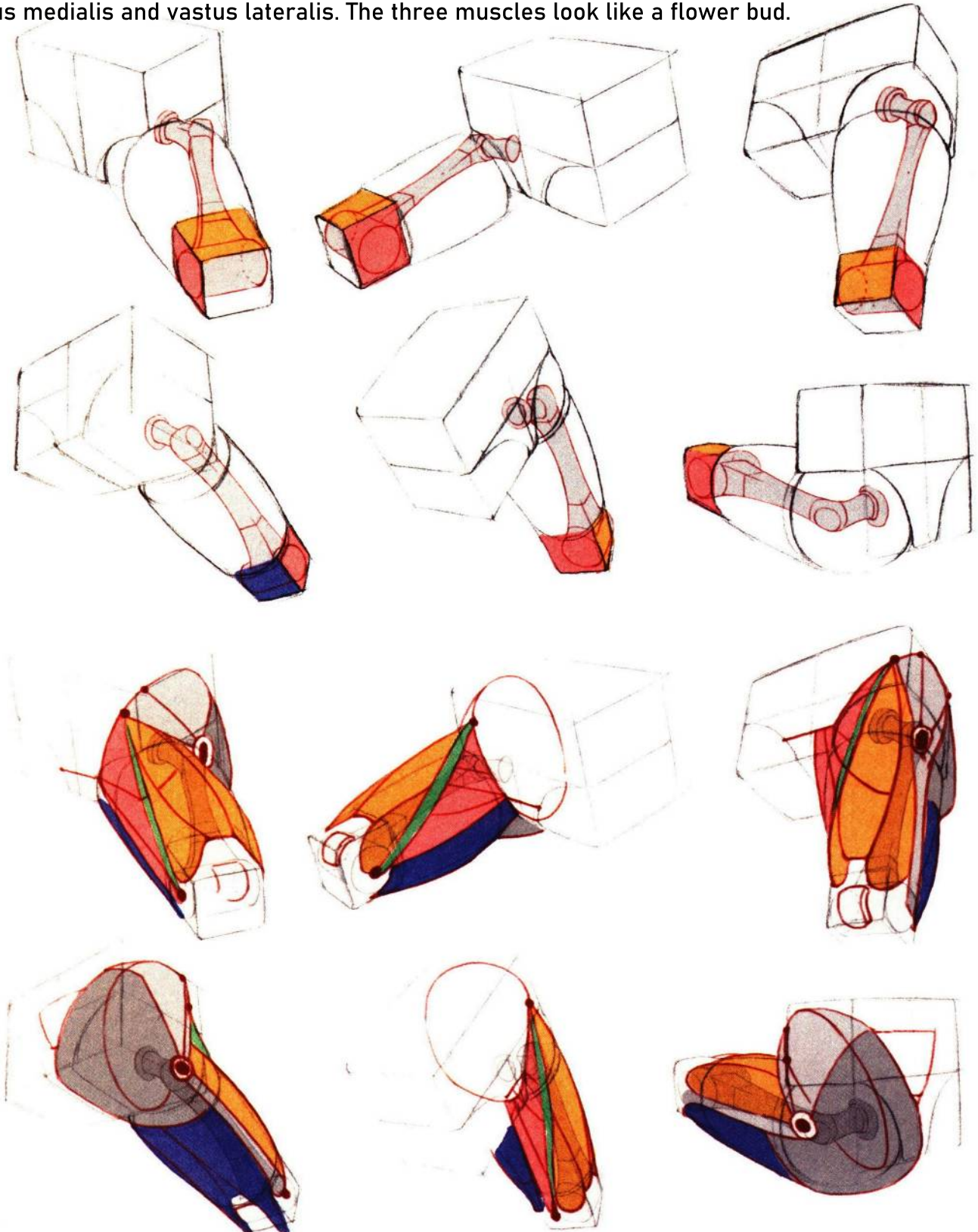
The more important muscles of the pelvic structure are found on the left and right sides of the pelvis. These muscles start at the top of the pelvis, where they join the greater trochanter. These muscles start at the top of the pelvis and connect to the greater trochanter.

The muscles on both sides are also deformed when the leg is in motion.



09 Structure of the thigh muscles

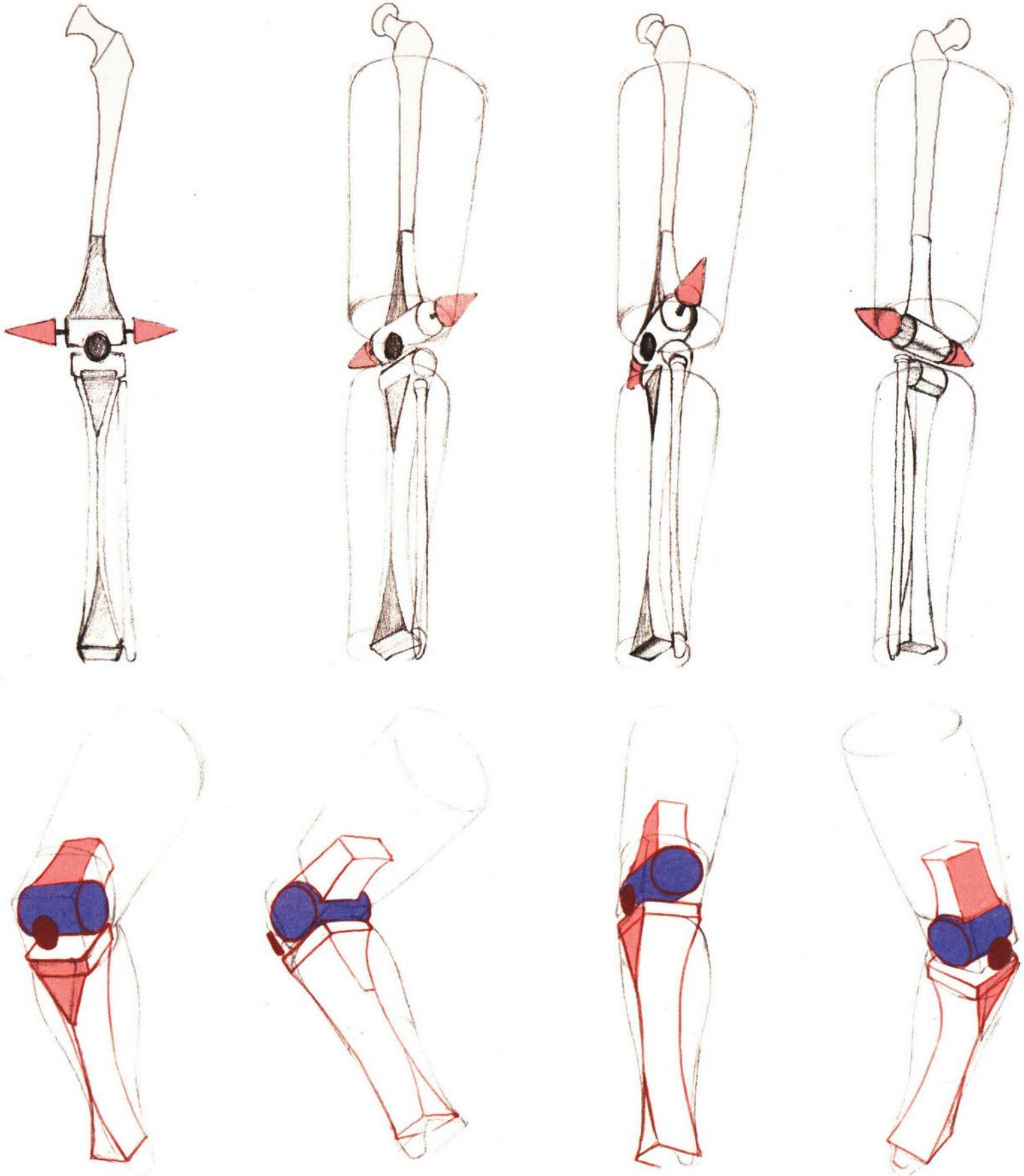
Drawing the thigh muscles is similar to drawing the muscles of the forearm. Determine the exact position of the front, side, and back of the knee, and draw the front, medial, and back of the thigh muscles using the squares representing the knee. Front of the thigh include the rectus femoris, vastus medialis and vastus lateralis. The three muscles look like a flower bud.



The muscles of the inner thigh are mainly the seamstress muscles: more complex and can be collectively referred to as the adductor muscles. The muscles on the back of the thigh are the biceps femoris and semitendinosus, which are located on the back of the thigh like a small fork.

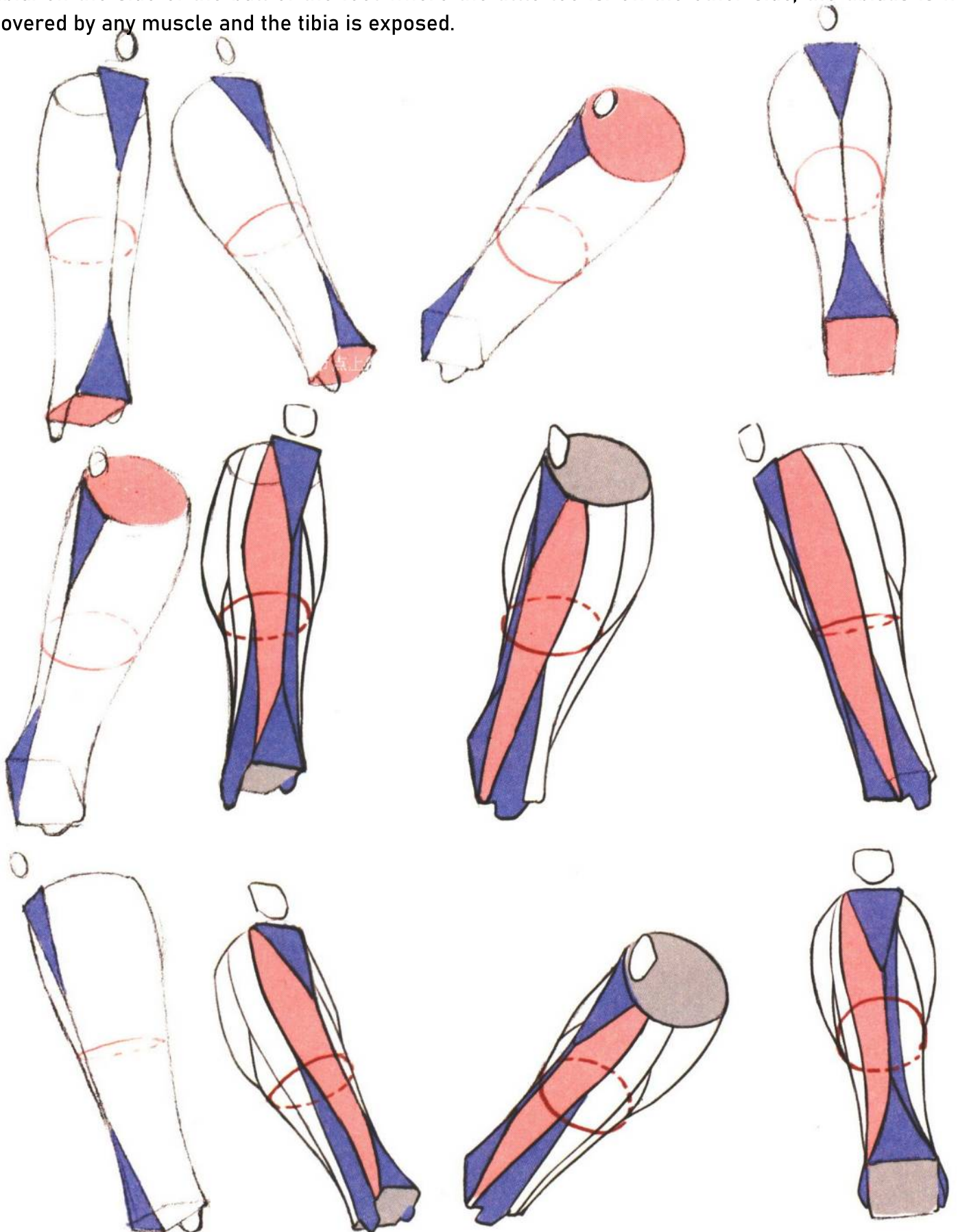
10 Structure of the knee joint

The structure of the knee joint is similar to that of the elbow joint, so we can also consider the knee joint as a cylinder when we draw it. The knee joint is an important part of the spatial relationship of the leg, and it is helpful to show clearly the state of the cylinder under different angles for the subsequent shaping of the leg.



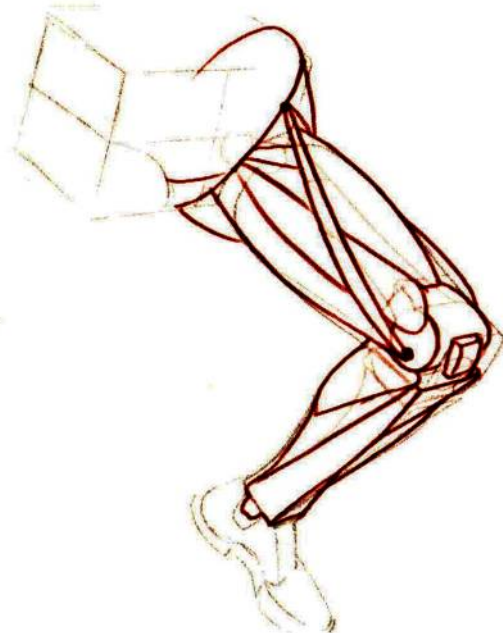
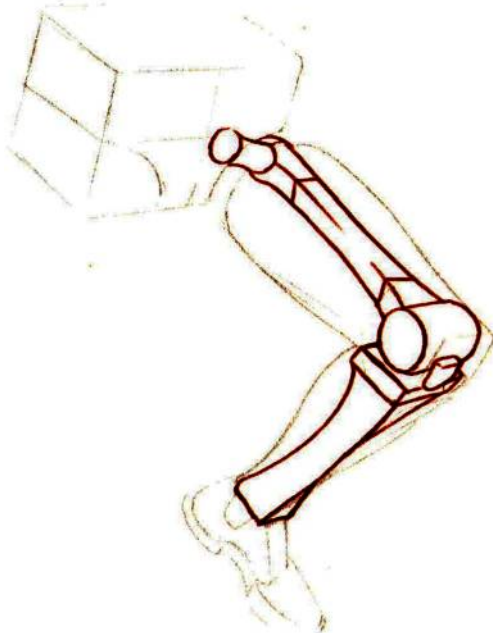
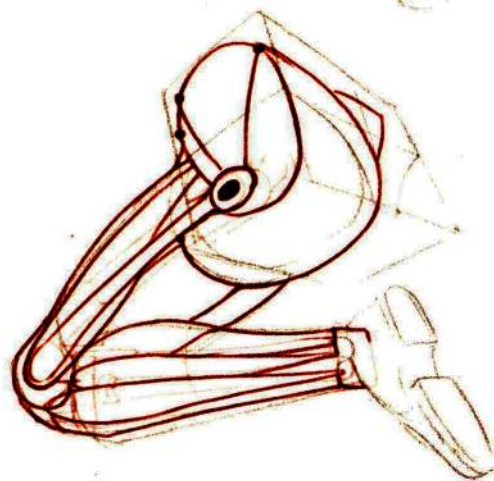
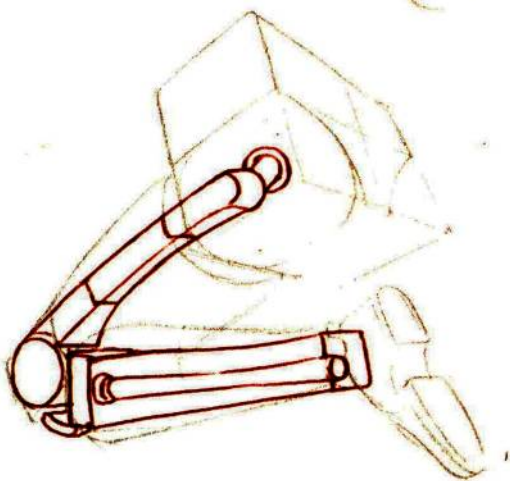
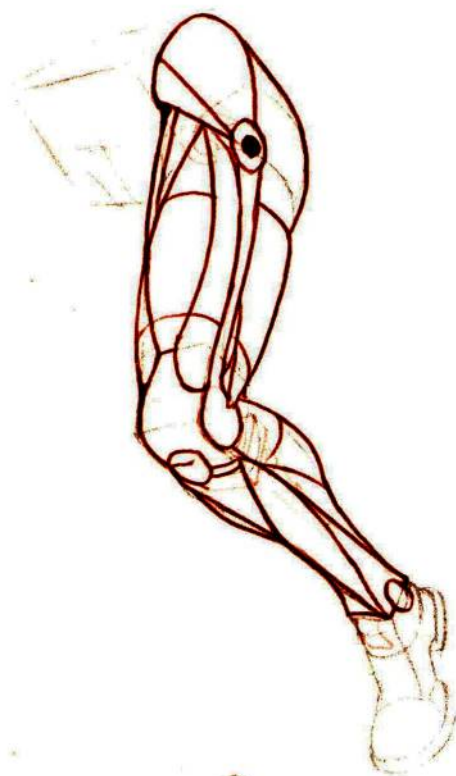
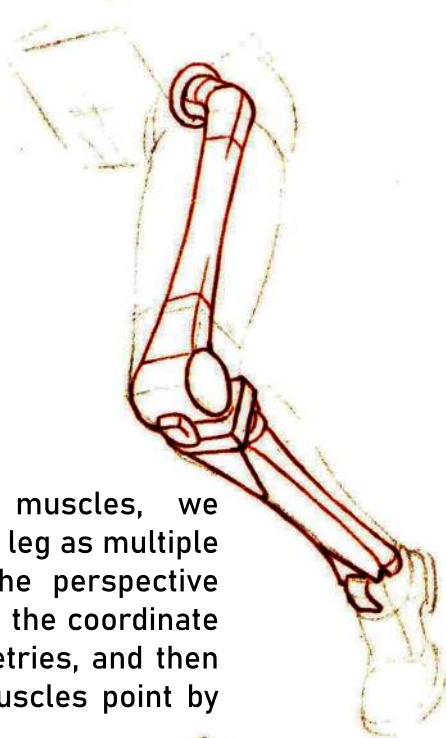
11 Structure of the calf

The calf can be viewed as a combination of a cylinder and a rectangle, divided at one-half of the length of the calf: the upper part of the calf resembles a cylinder and the lower part a rectangle. The muscles of the calf are more complex, with the tibialis anterior attaching to the lateral side of the tibia: on the side of the ball of the foot where the little toe is. On the other side, the tibialis is not covered by any muscle and the tibia is exposed.

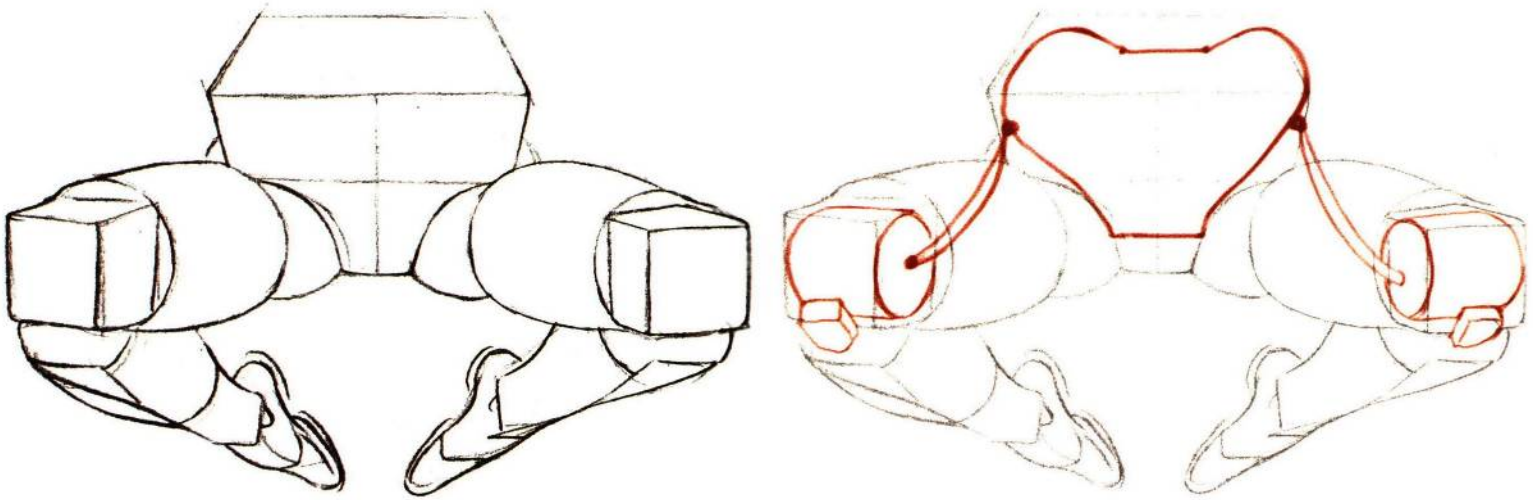


12 Exercises for drawing leg muscles

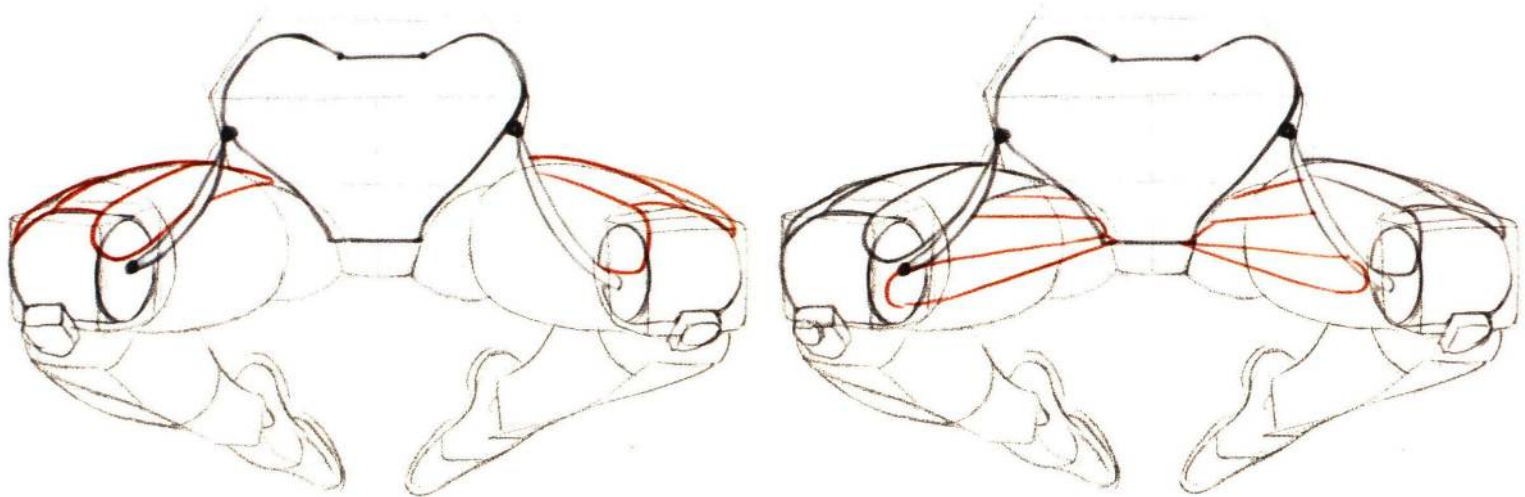
When drawing leg muscles, we should first look at the leg as multiple geometries, control the perspective of the geometries, find the coordinate direction of the geometries, and then gradually draw the muscles point by point.



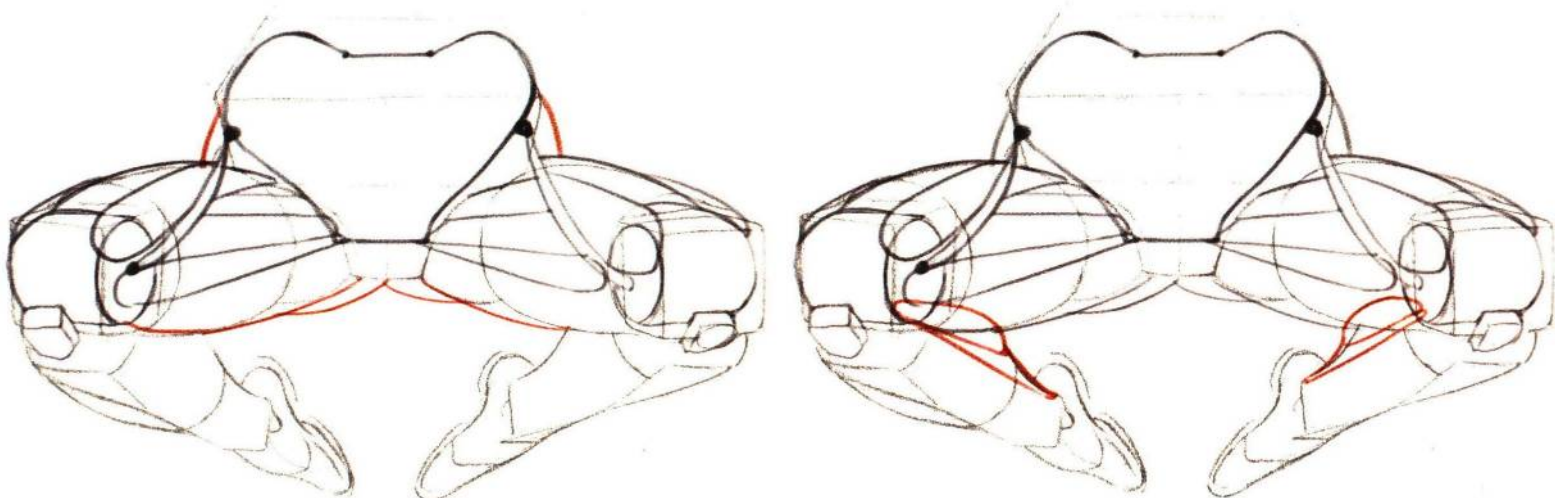
Draw a correct perspective of the leg geometry, find the exact position of the pelvis and knee, and draw the basic shape.

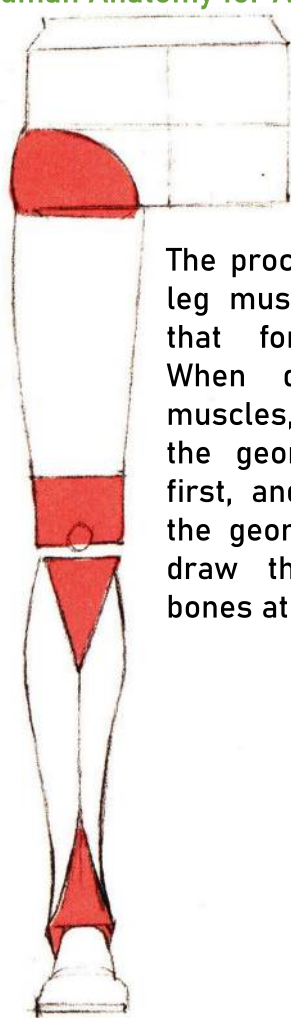


Draw the front and inner thigh muscles.

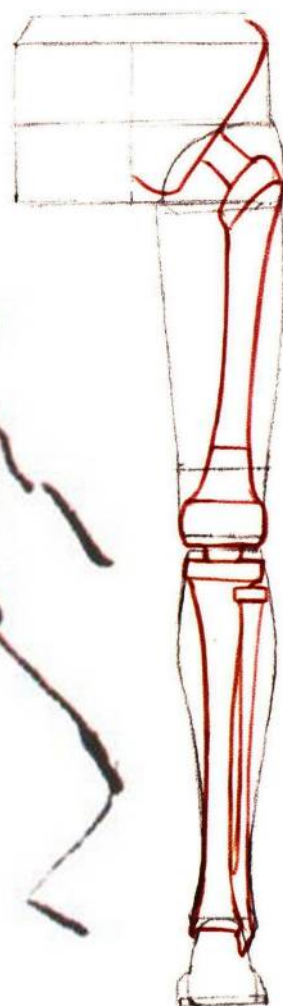
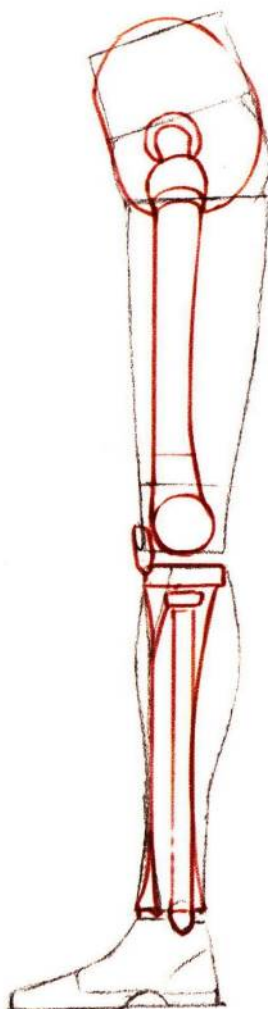
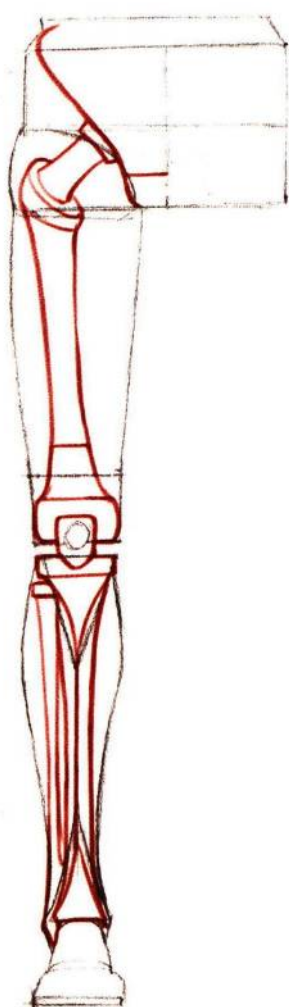
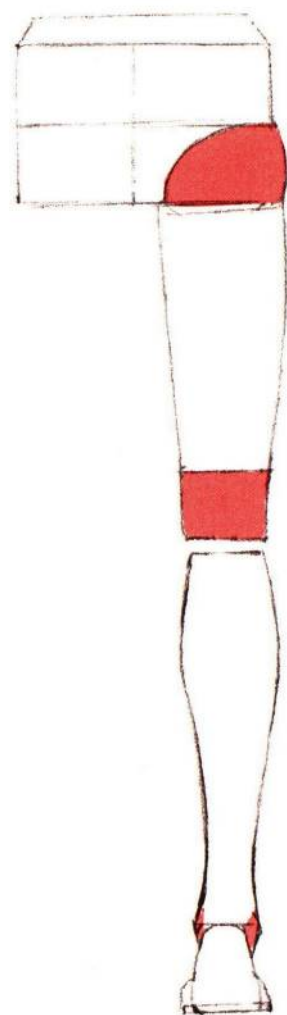
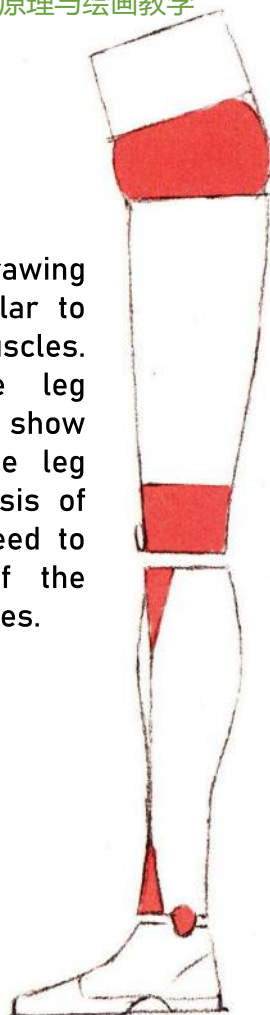


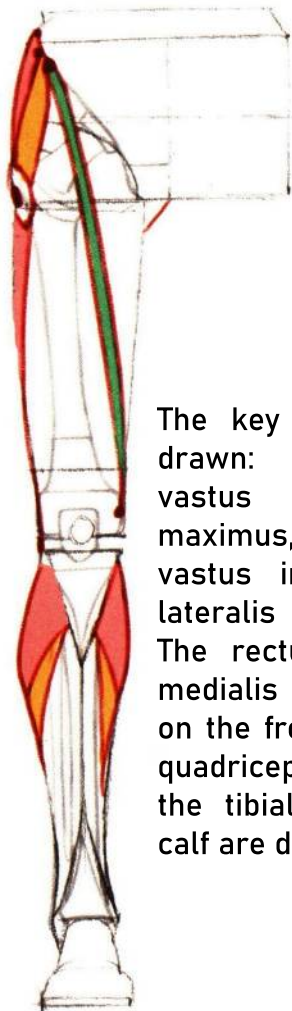
Draw the muscle groups on the back of the thigh, and then draw the muscles of the calf, paying attention to show the squeeze between the muscles.



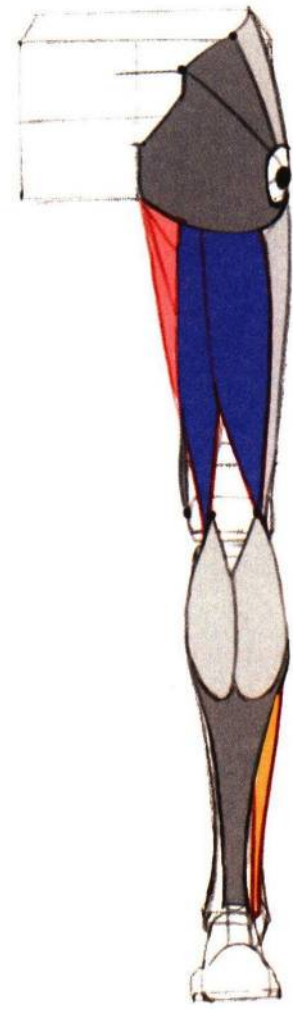
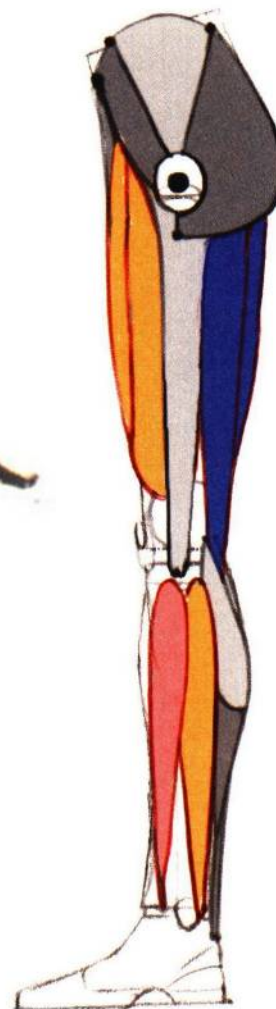
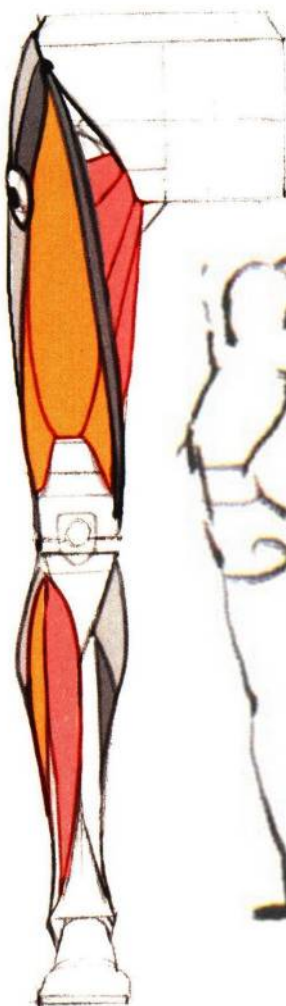
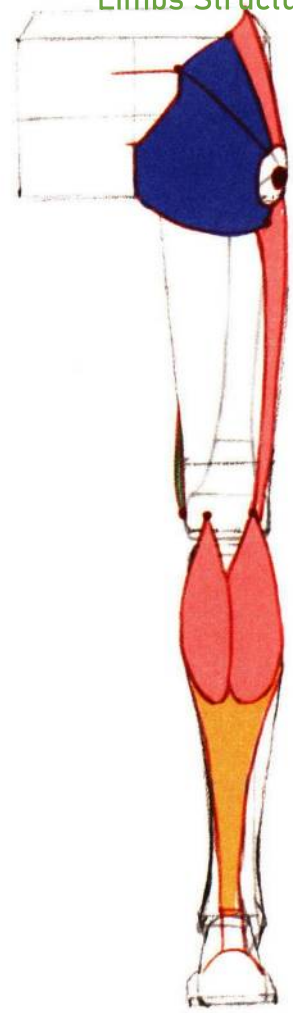
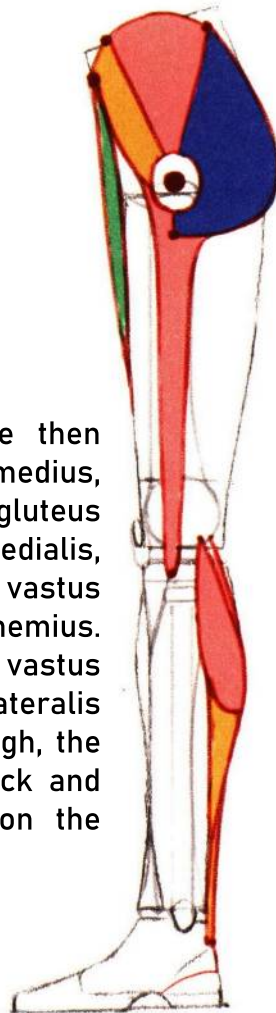


The procedure for drawing leg muscles is similar to that for arm muscles. When drawing the leg muscles, we need to show the geometry of the leg first, and on the basis of the geometry, we need to draw the shape of the bones at various angles.



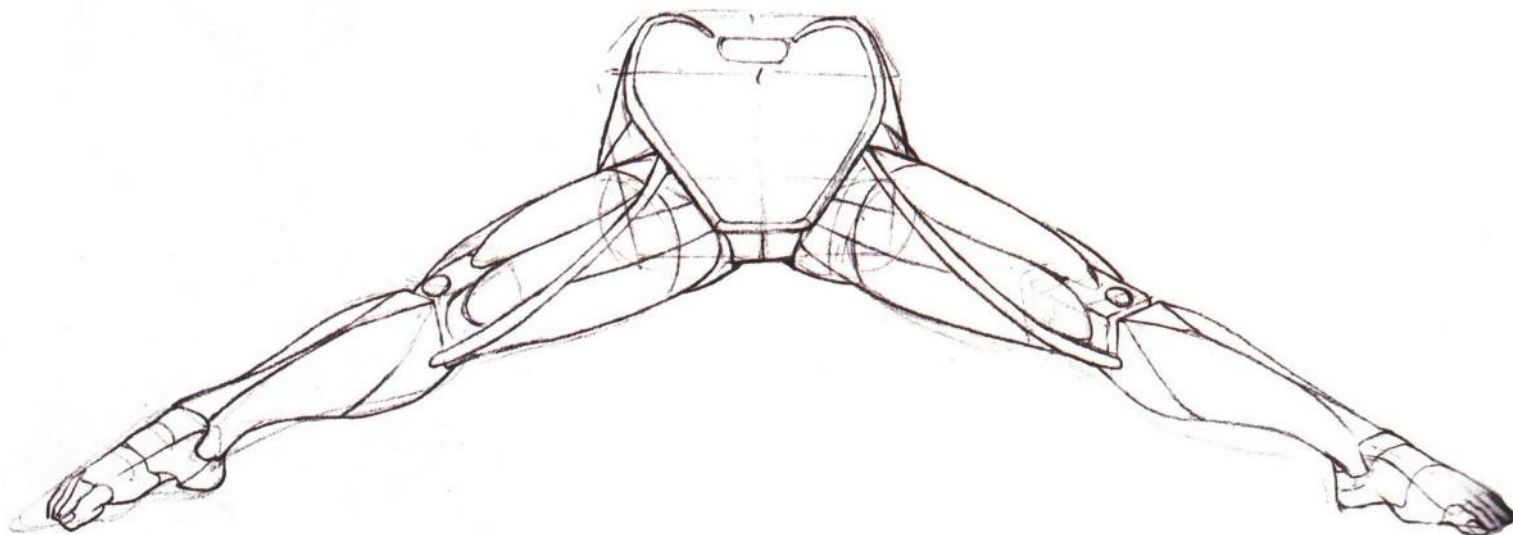


The key muscles are then drawn: gluteus medius, vastus tensor, gluteus maximus, vastus medialis, vastus intermedius, vastus lateralis and gastrocnemius. The rectus femoris, vastus medialis and vastus lateralis on the front of the thigh, the quadriceps on the back and the tibialis anterior on the calf are drawn.

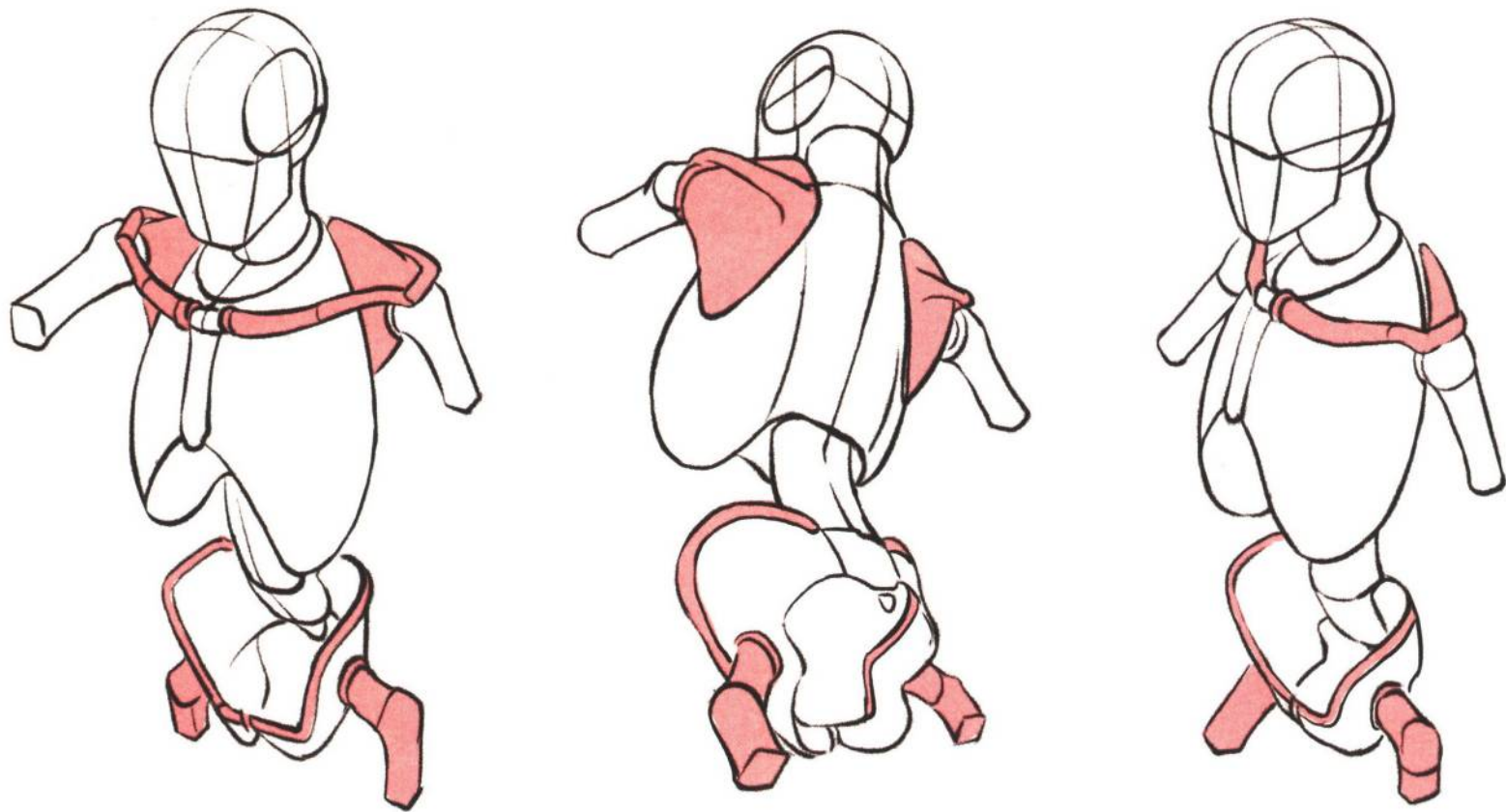




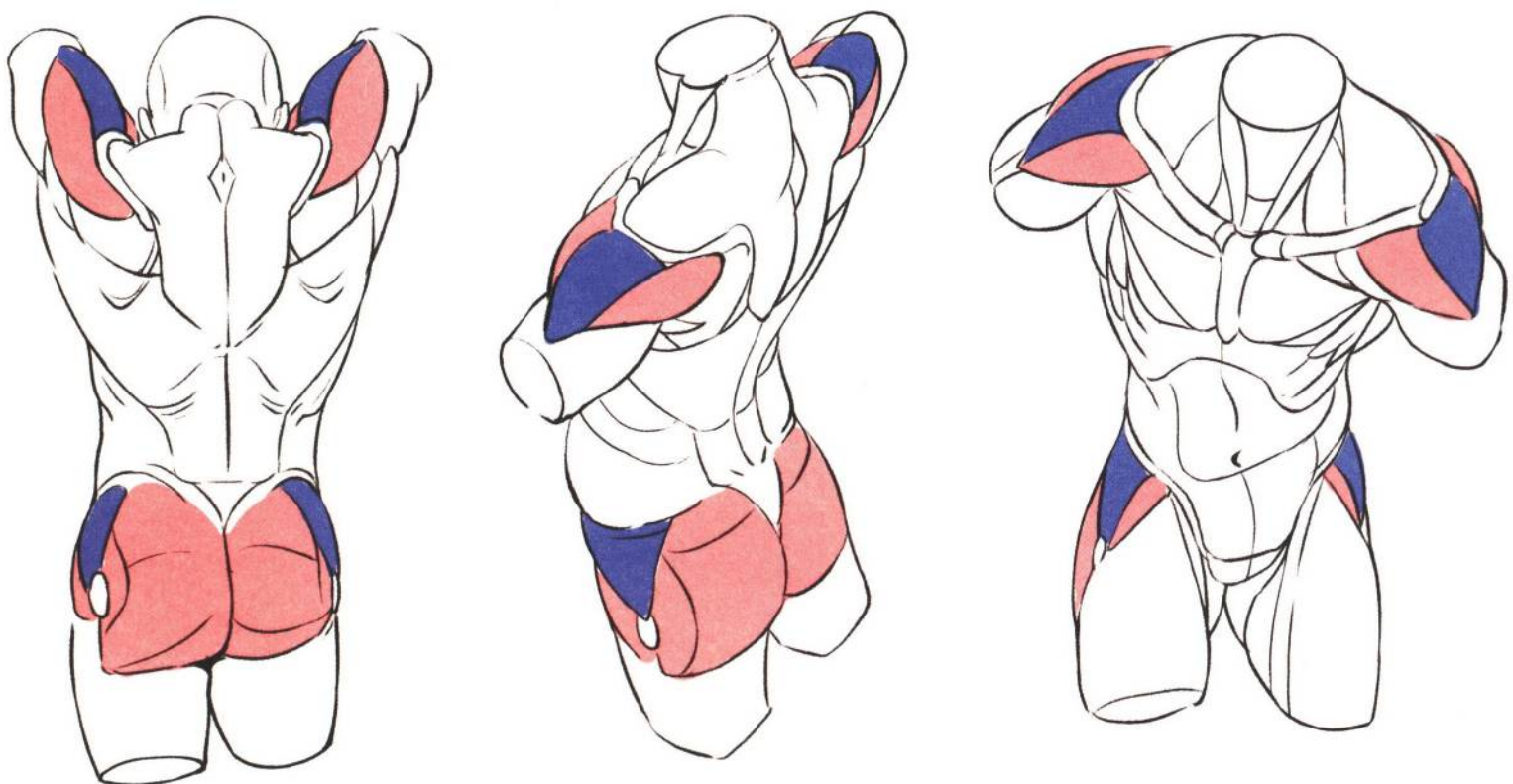
We can also refer to the leg dynamics of the real human body and practice with the following pictures.

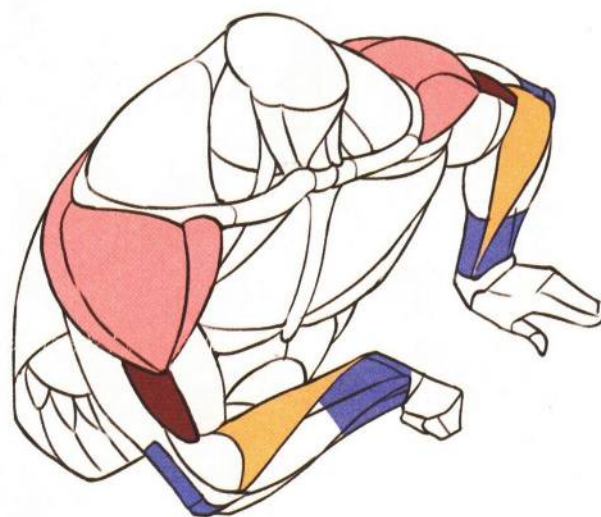
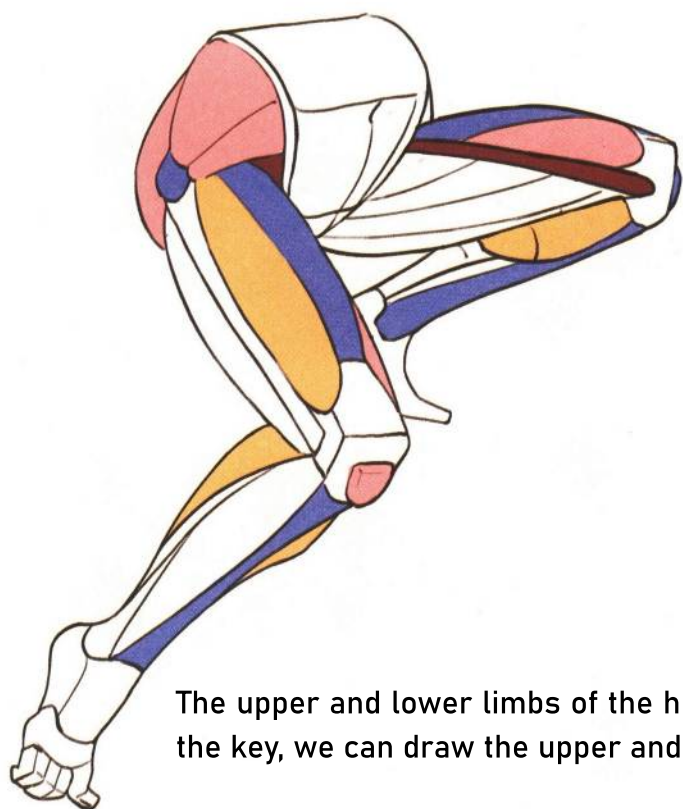
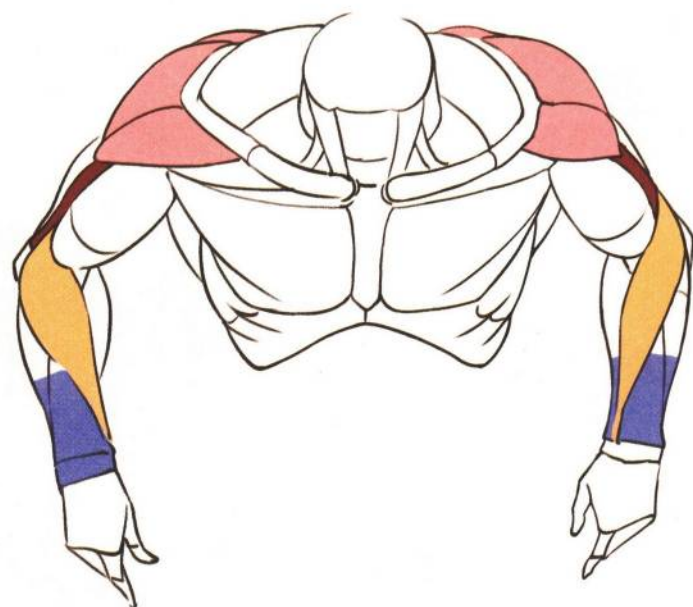
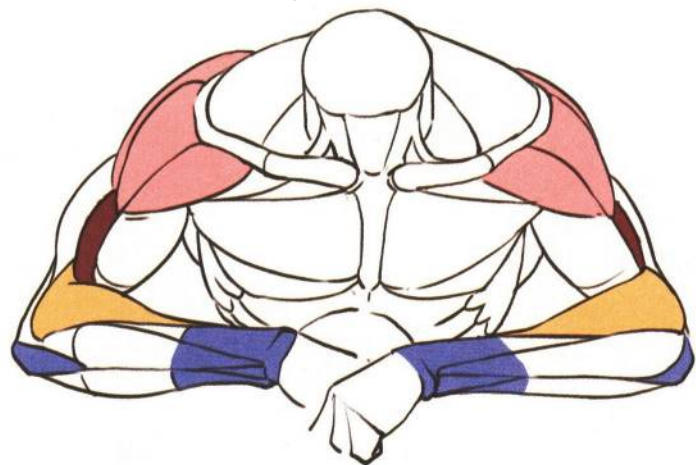


The most difficult part of drawing limbs is the starting point of the limbs. If we know the four major bones of the human body and the different movement states of the four major points, we can draw the natural limbs.

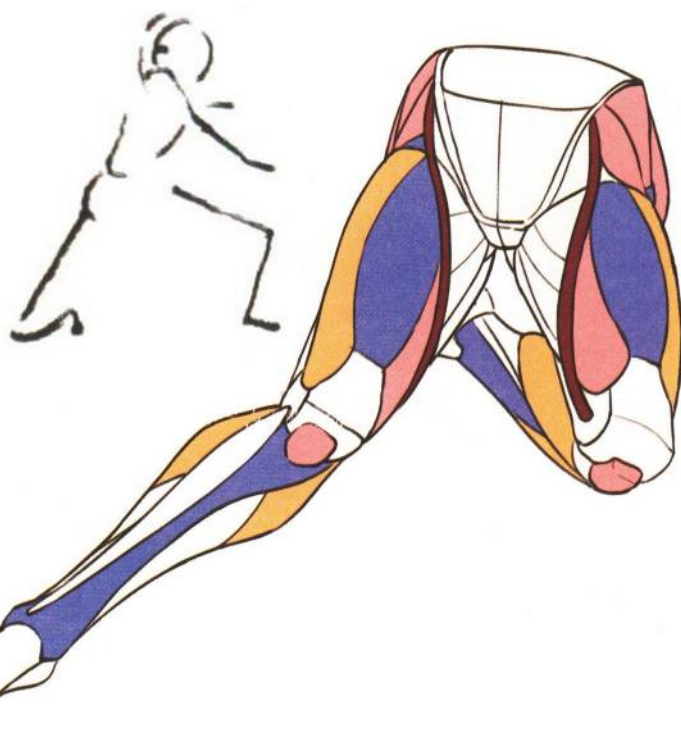
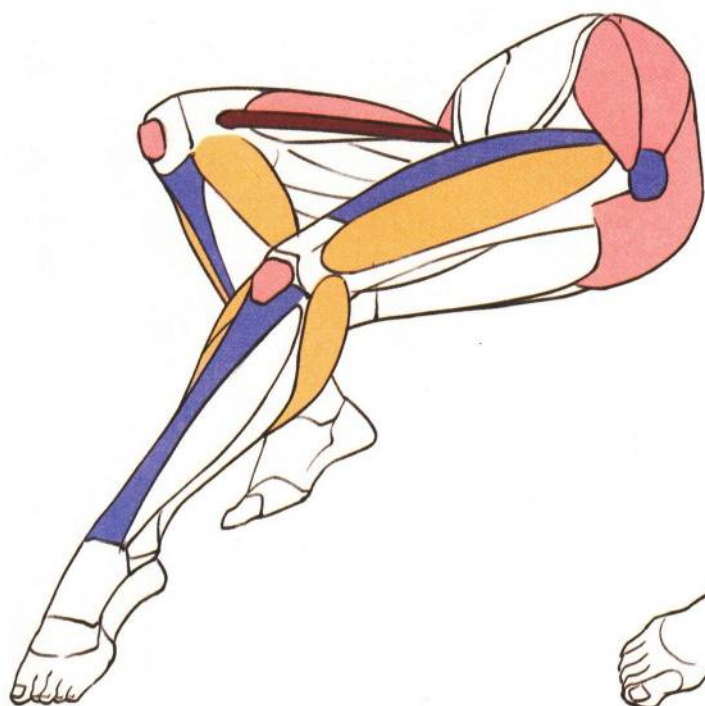


When drawing the muscles of the limbs, we should focus on the muscle status of the four major points, and express the muscle groups of the front, side and back of the four major points, which will help us to better express the changes in the movement of the limbs.



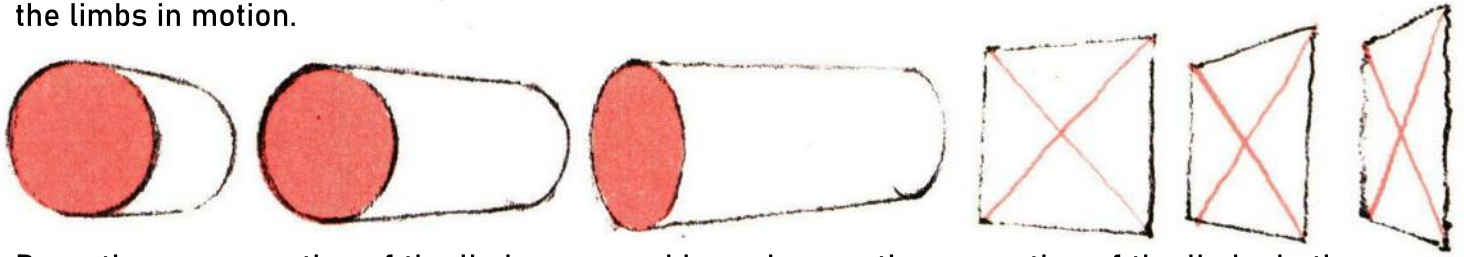


The upper and lower limbs of the human body have some key muscles, learn to grasp the key, we can draw the upper and lower limbs.

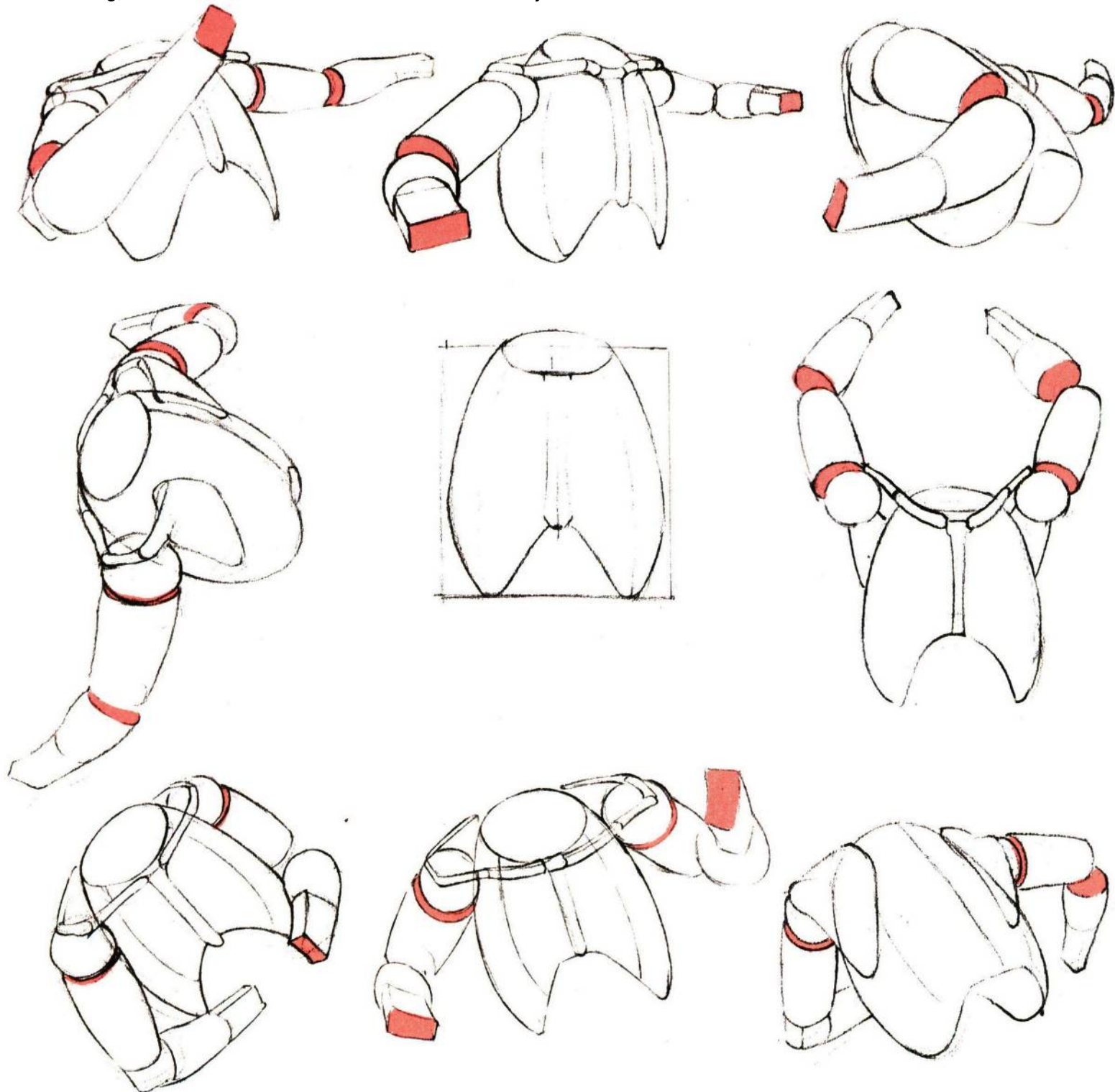


13 The use of upper limb structure

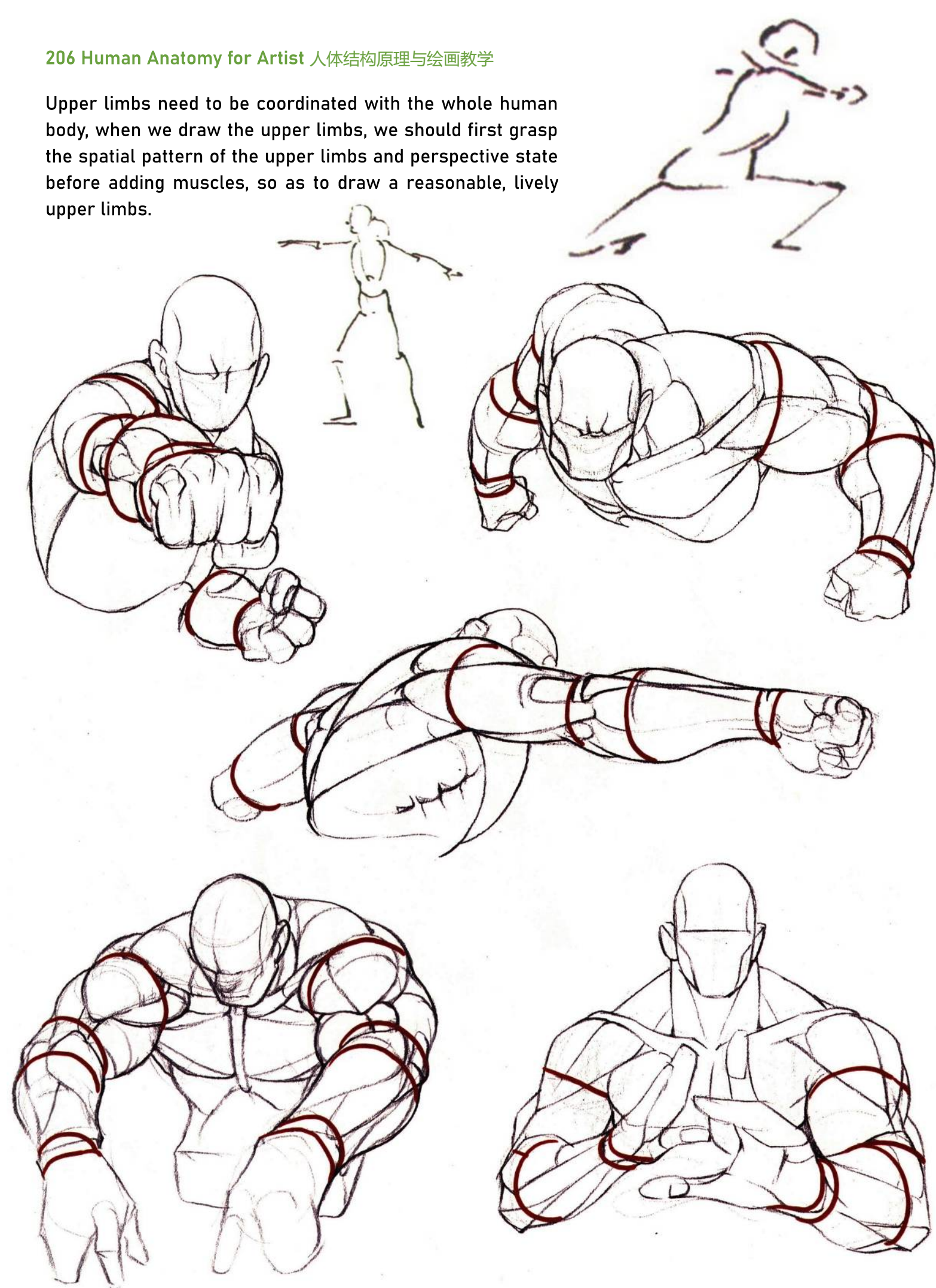
The difficulty of drawing limbs is to grasp the spatial expression of the limbs, which is mainly focused on the changes in the cross-section of the limbs and the perspective changes produced by the limbs in motion.



Draw the cross-section of the limbs reasonably, and grasp the proportion of the limbs in the space scaling, so that the limbs can be drawn naturally.



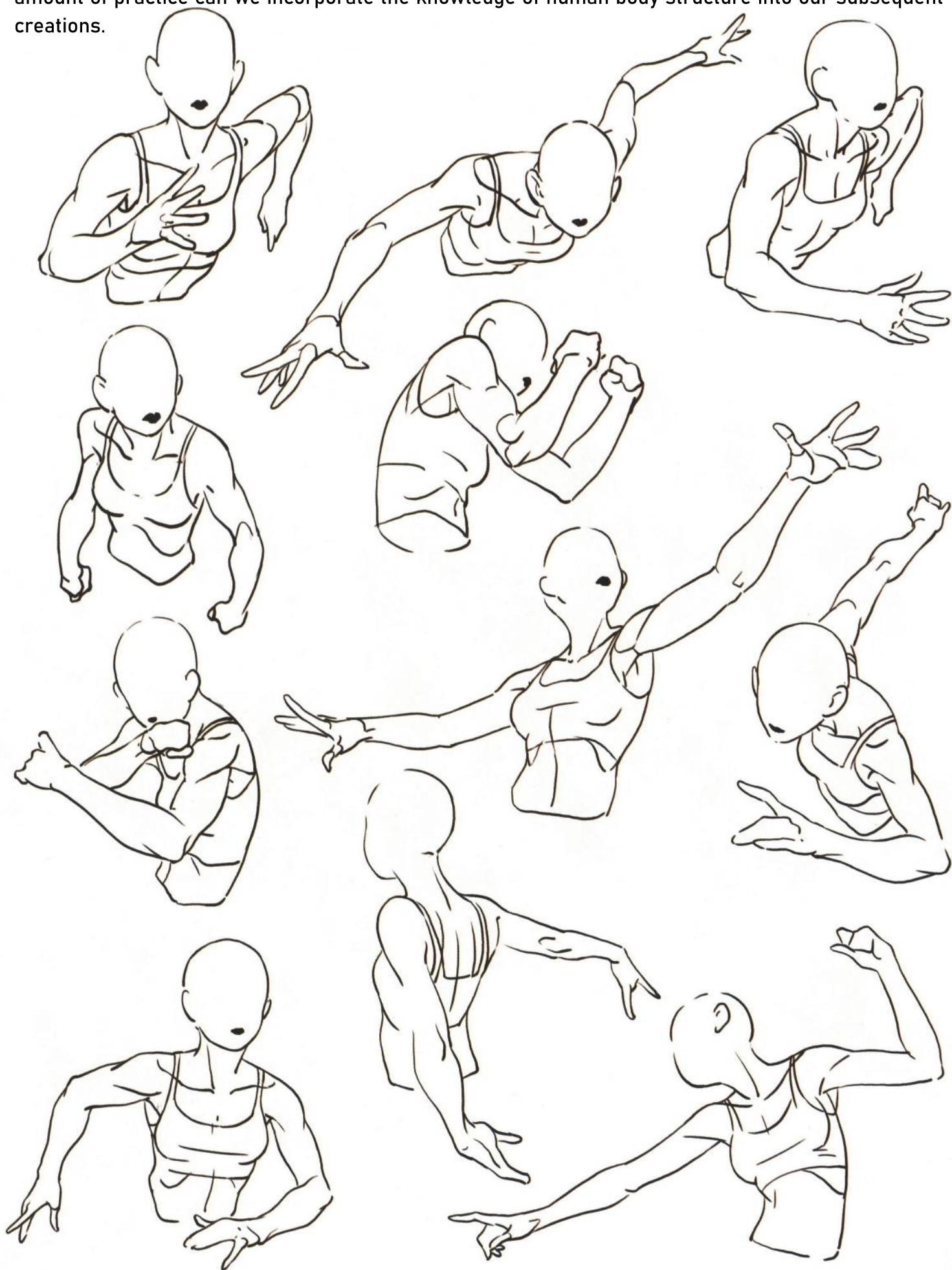
Upper limbs need to be coordinated with the whole human body, when we draw the upper limbs, we should first grasp the spatial pattern of the upper limbs and perspective state before adding muscles, so as to draw a reasonable, lively upper limbs.

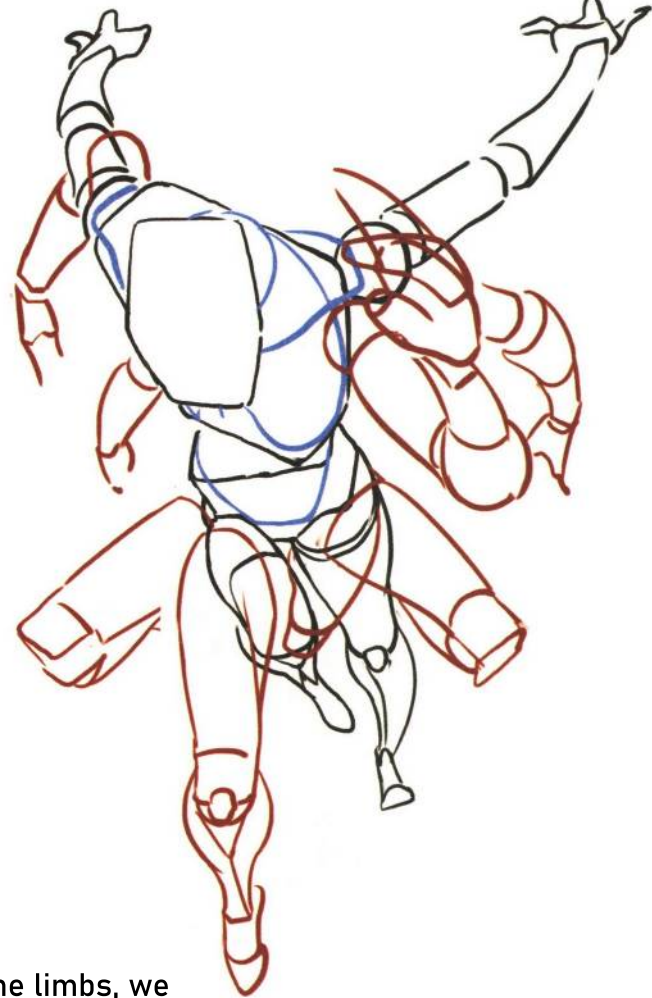
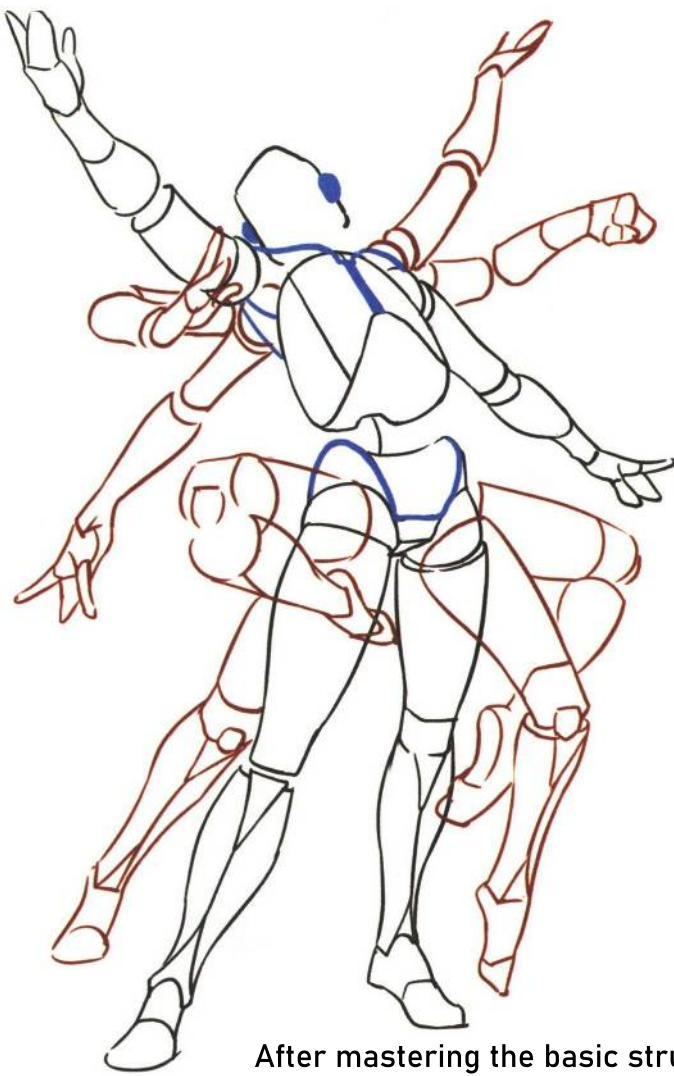


After mastering the knowledge of drawing upper limbs, we need to do a lot of sketching practice, by drawing the above common reference drawings in life, we can be more skillful in drawing natural upper limbs.

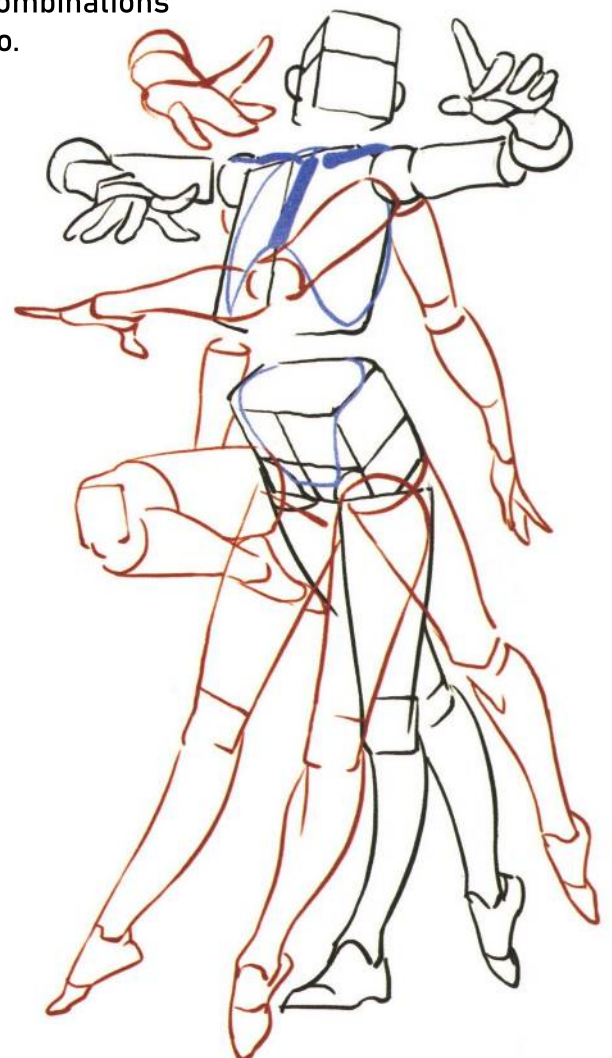
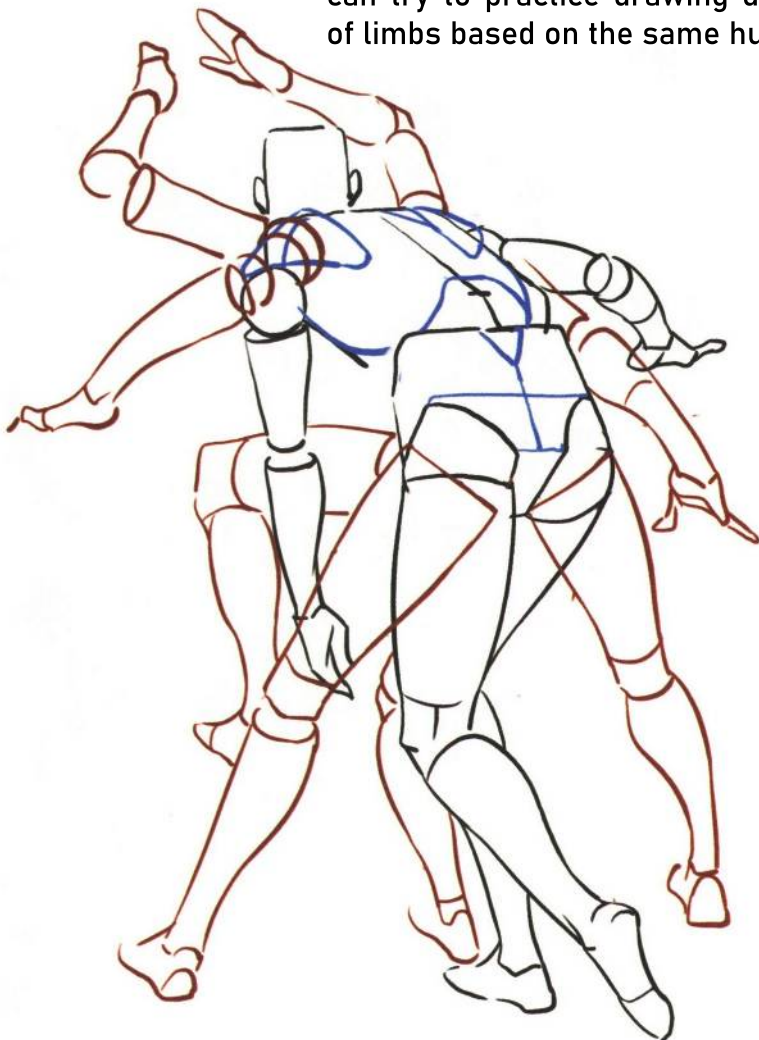


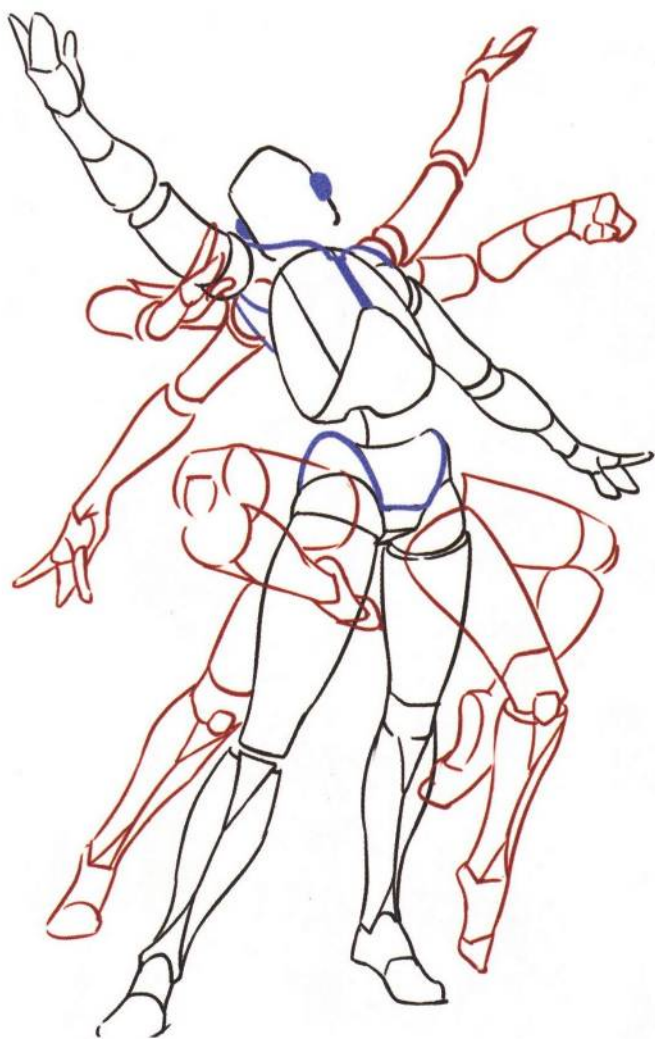
Once we know a certain amount of knowledge about the human body structure, we don't need to draw every single muscle, but we should choose some and practice hard. Only after a certain amount of practice can we incorporate the knowledge of human body structure into our subsequent creations.



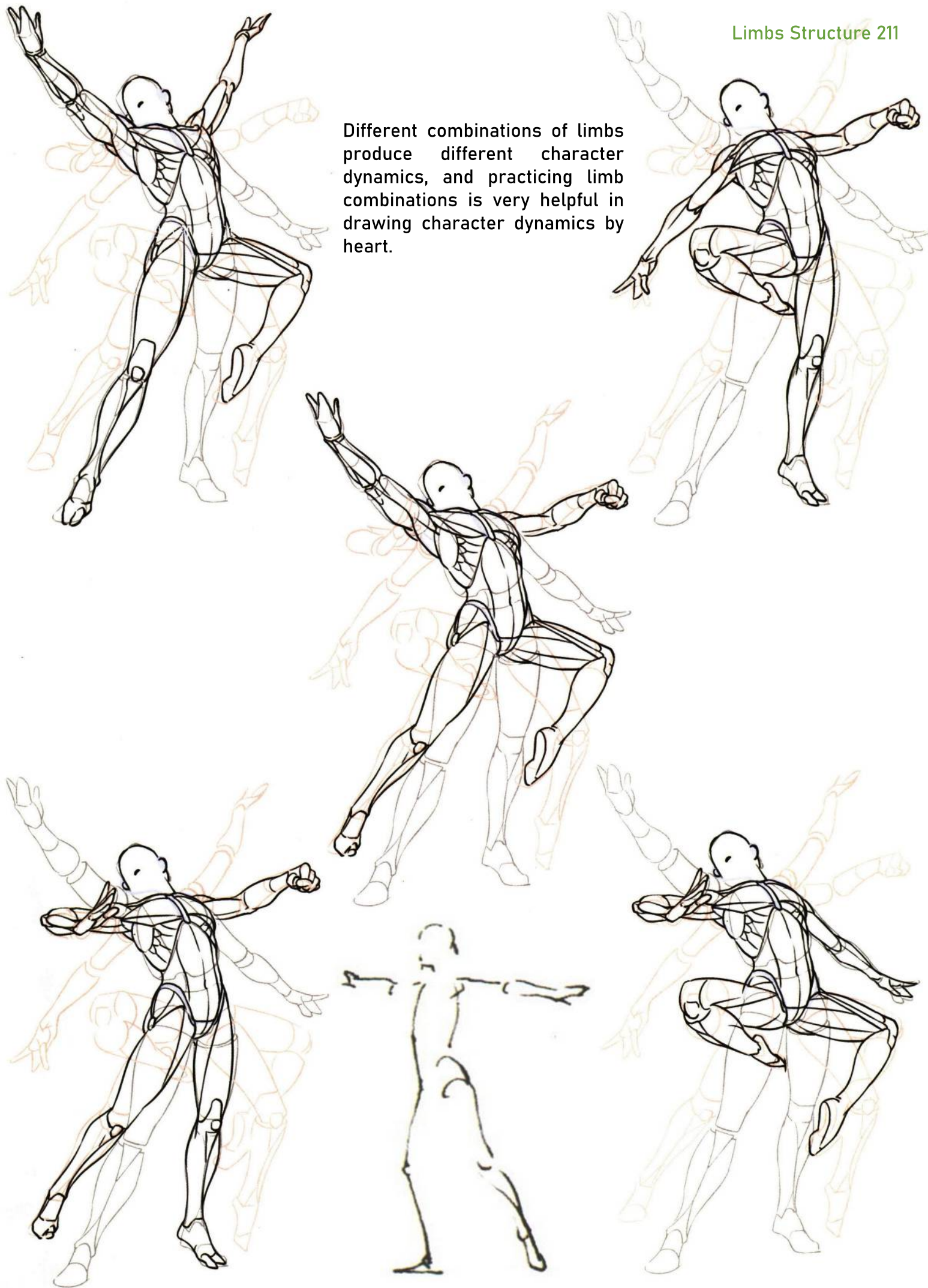


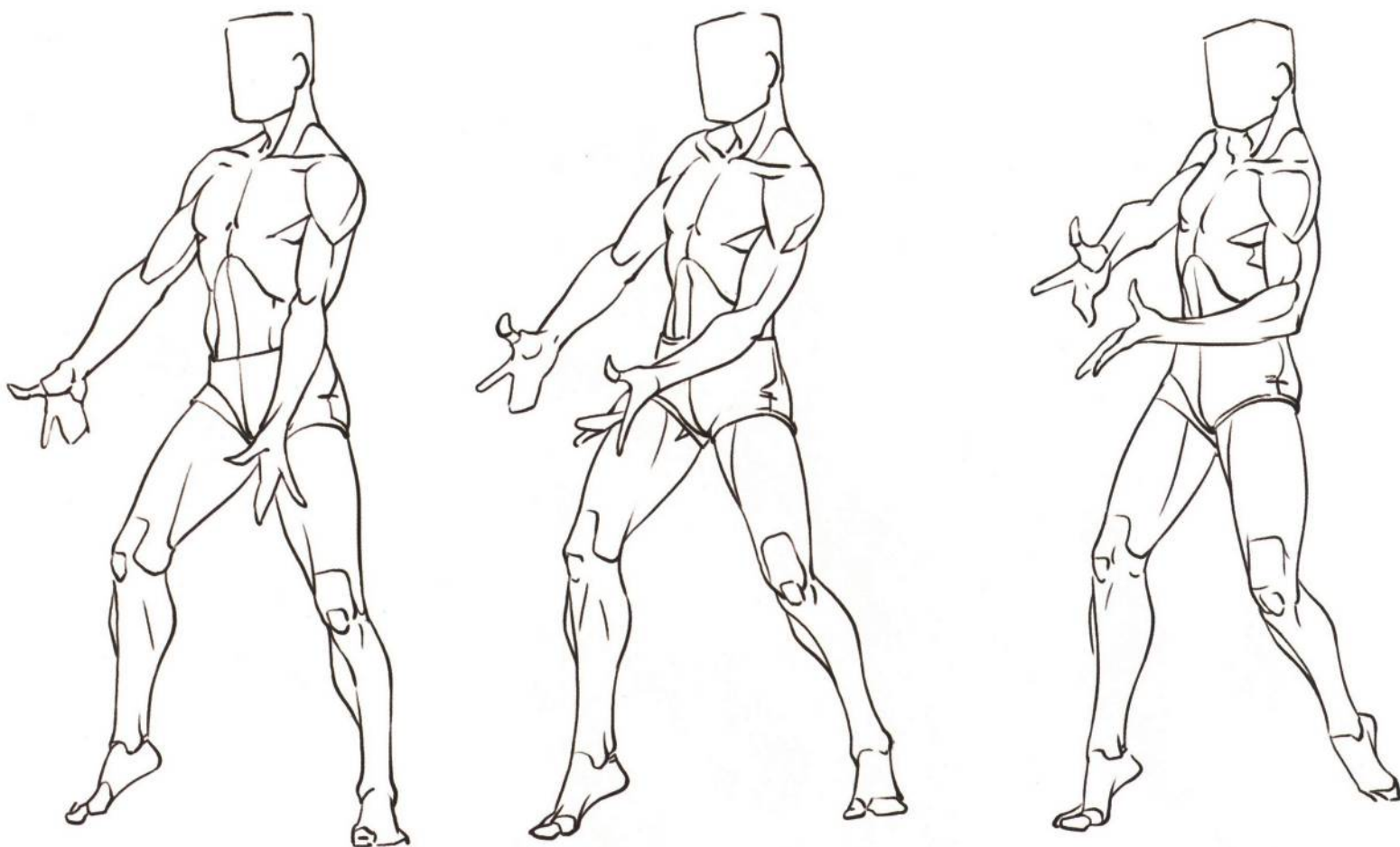
After mastering the basic structure of the limbs, we can try to practice drawing different combinations of limbs based on the same human torso.



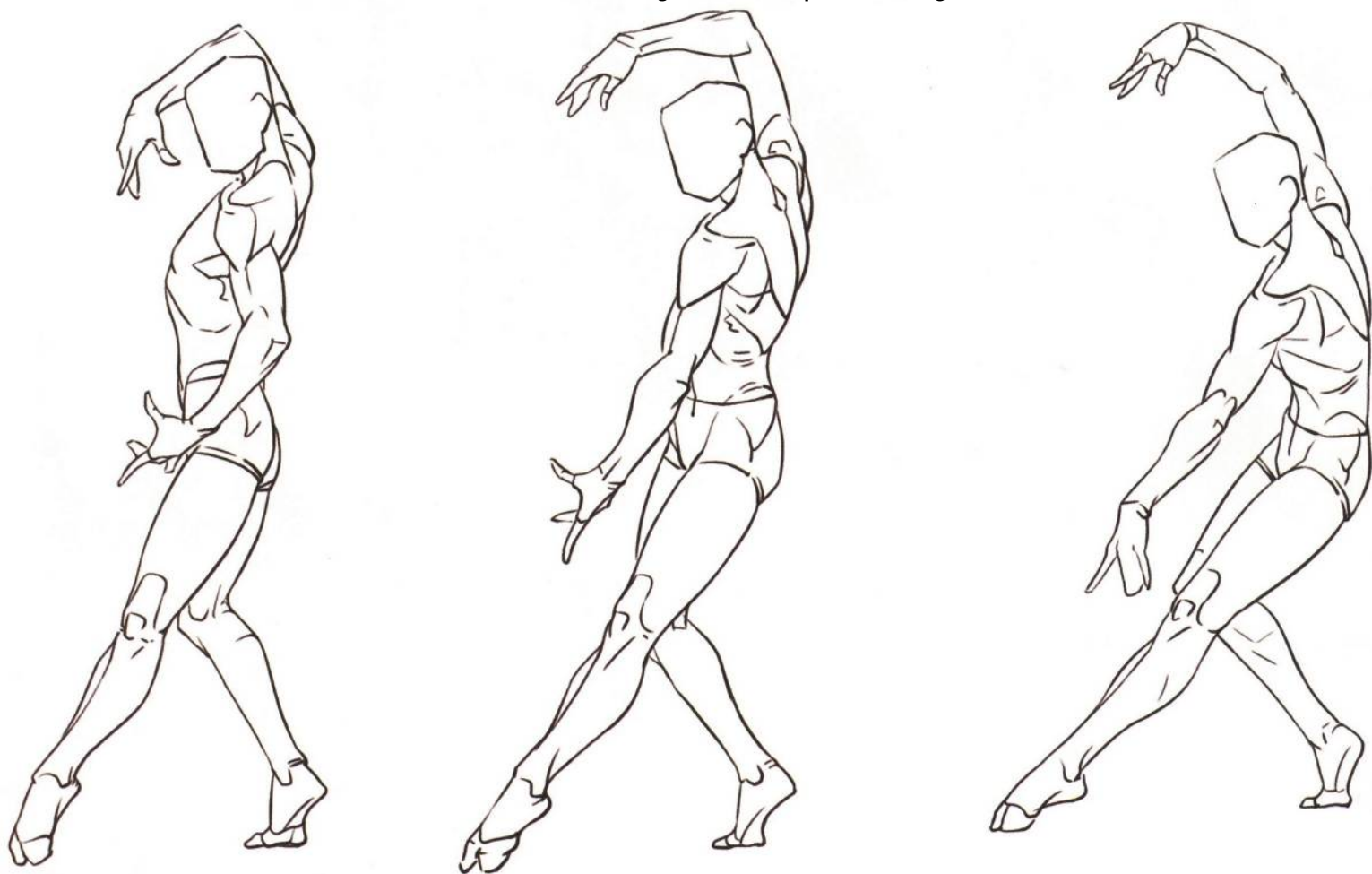


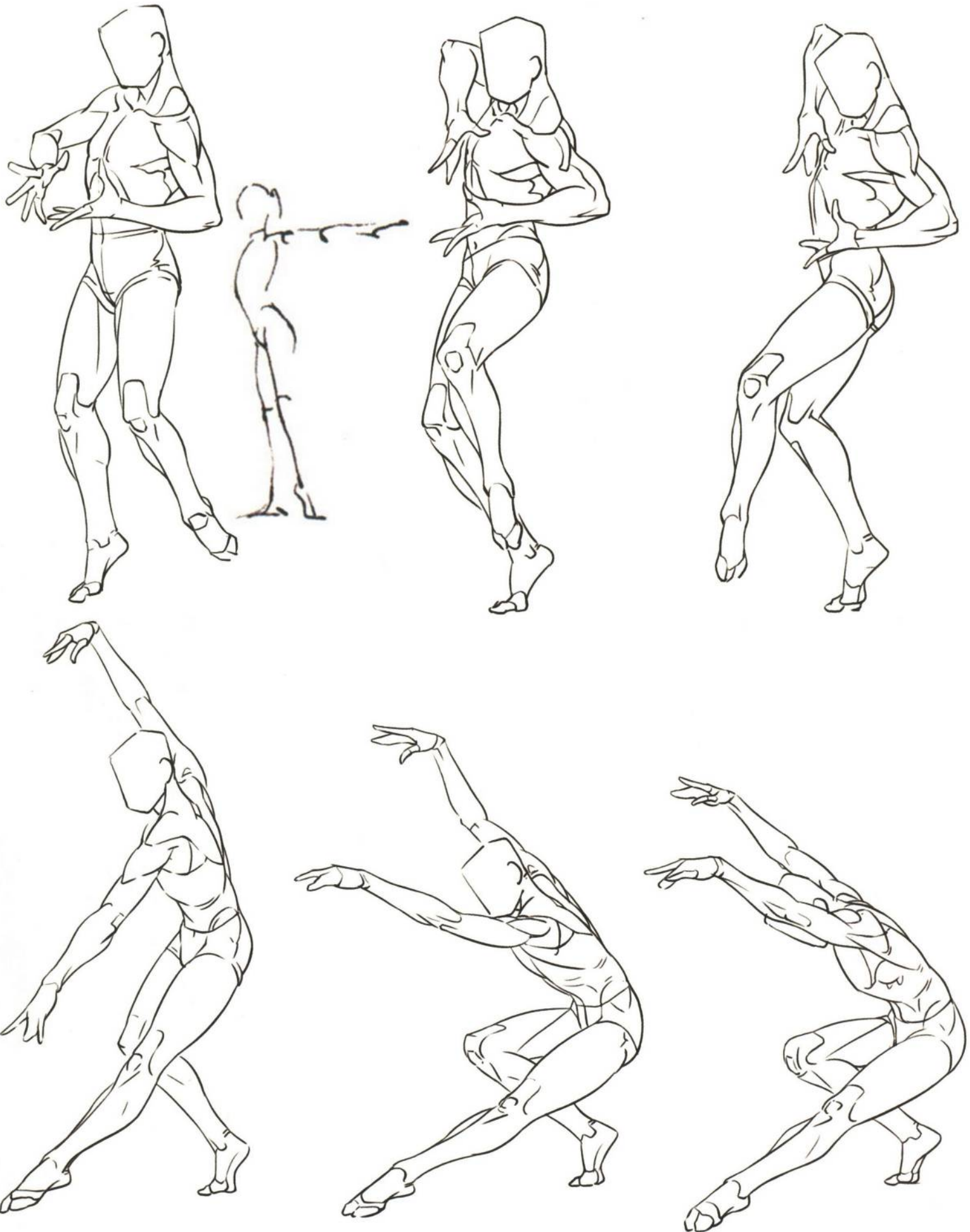
Different combinations of limbs produce different character dynamics, and practicing limb combinations is very helpful in drawing character dynamics by heart.

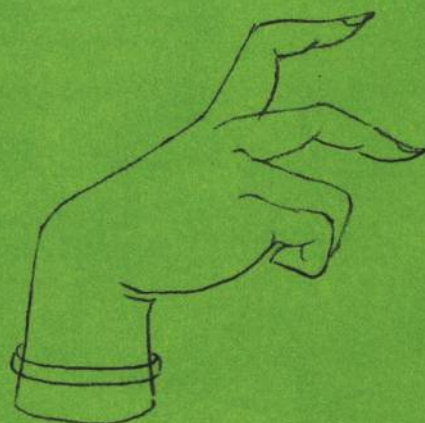




After mastering the pattern of change of the limbs, we can try to draw such a set of continuous action, familiar with the limbs in the action changes in the space changes.







Chapter Five

Hand and Foot Structure

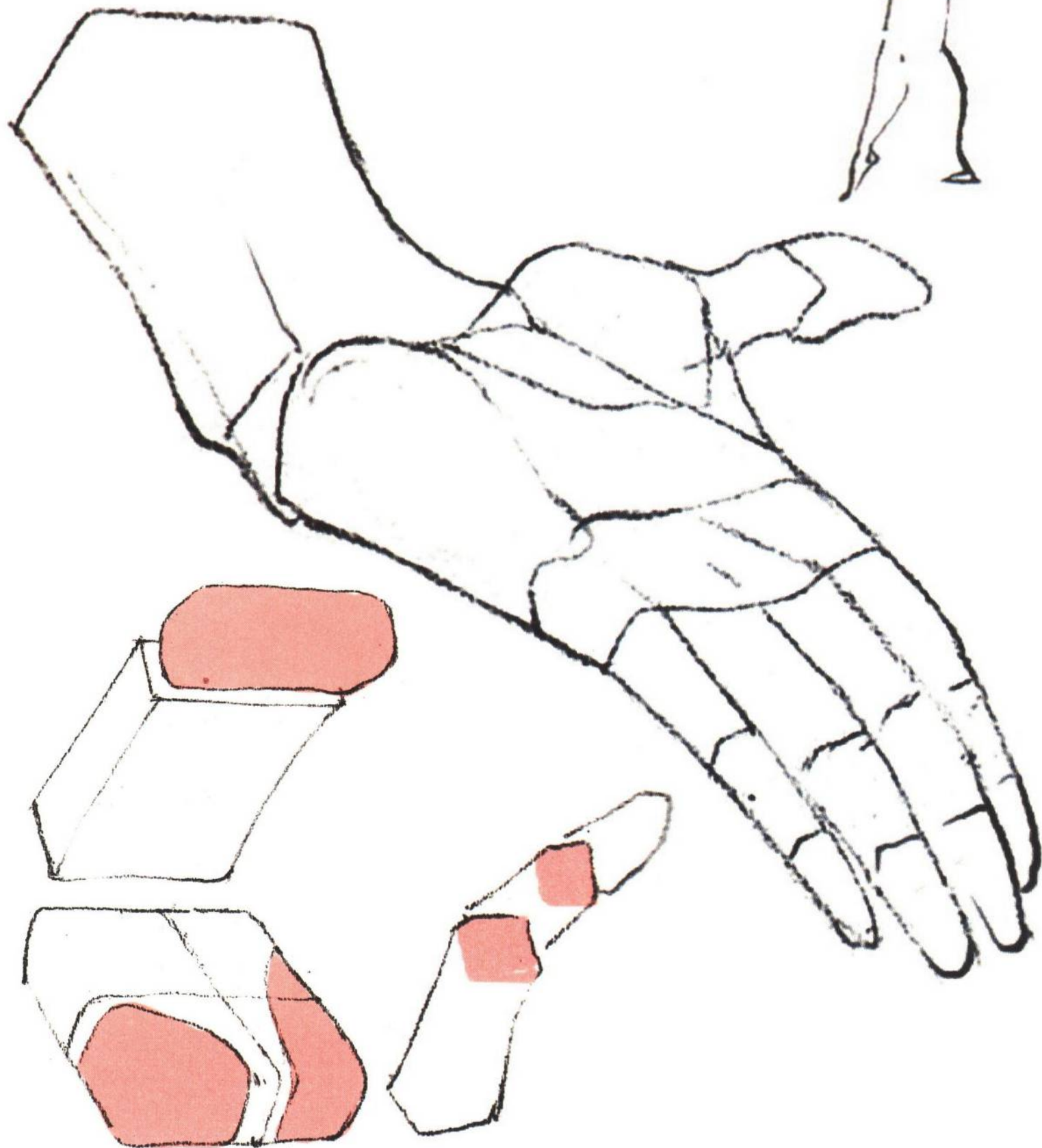
第五章

手脚结构

- 01 手的结构拆解
- 02 手的比例
- 03 手腕的结构
- 04 手掌的结构
- 05 手指的结构
- 06 手的空间关系
- 07 抓住东西的手绘制练习
- 08 握拳的手绘制练习
- 09 双手绘制练习
- 10 不同形态的手
- 11 脚的结构拆解
- 12 脚的比例关系
- 13 脚踝的结构
- 14 脚的结构要点
- 15 脚与地面的空间关系
- 16 脚的绘制步骤
- 17 脚部绘制要点
- 18 鞋子的绘制练习

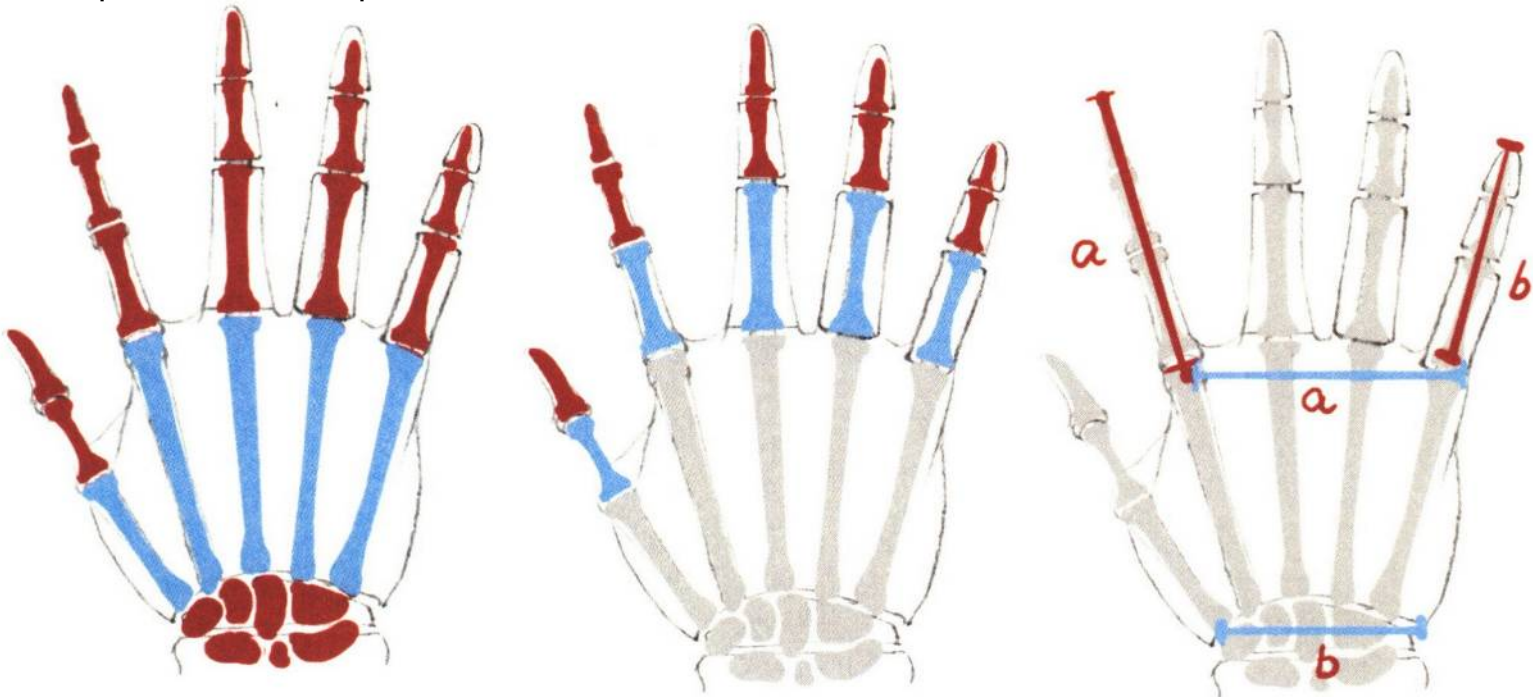
01 Structural disassembly of the hand

The hand is a complex part of the human body, with many joints, each of which leads to a corresponding change in the perspective of the fingers. When the hand is in motion, the fingers take on a variety of forms. In order to understand the structure of the hand, we can divide it into three parts: the wrist, the palm, and the fingers. In order to combine these three parts effectively, we need to grasp the key structural principles of each part.

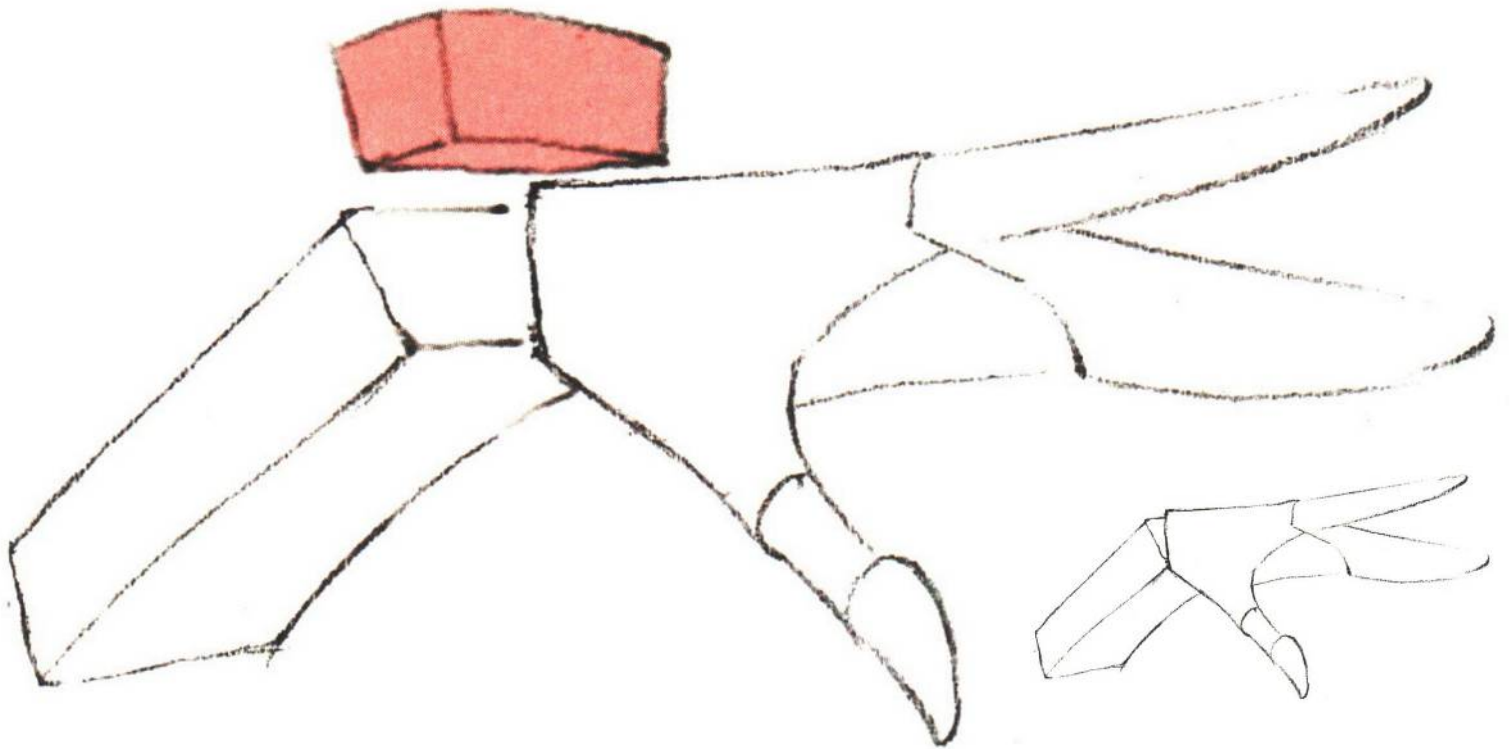


02 Proportion of hands

The fingers are divided into two parts, the length of the upper part being the same as the length of the part hidden in the palm.



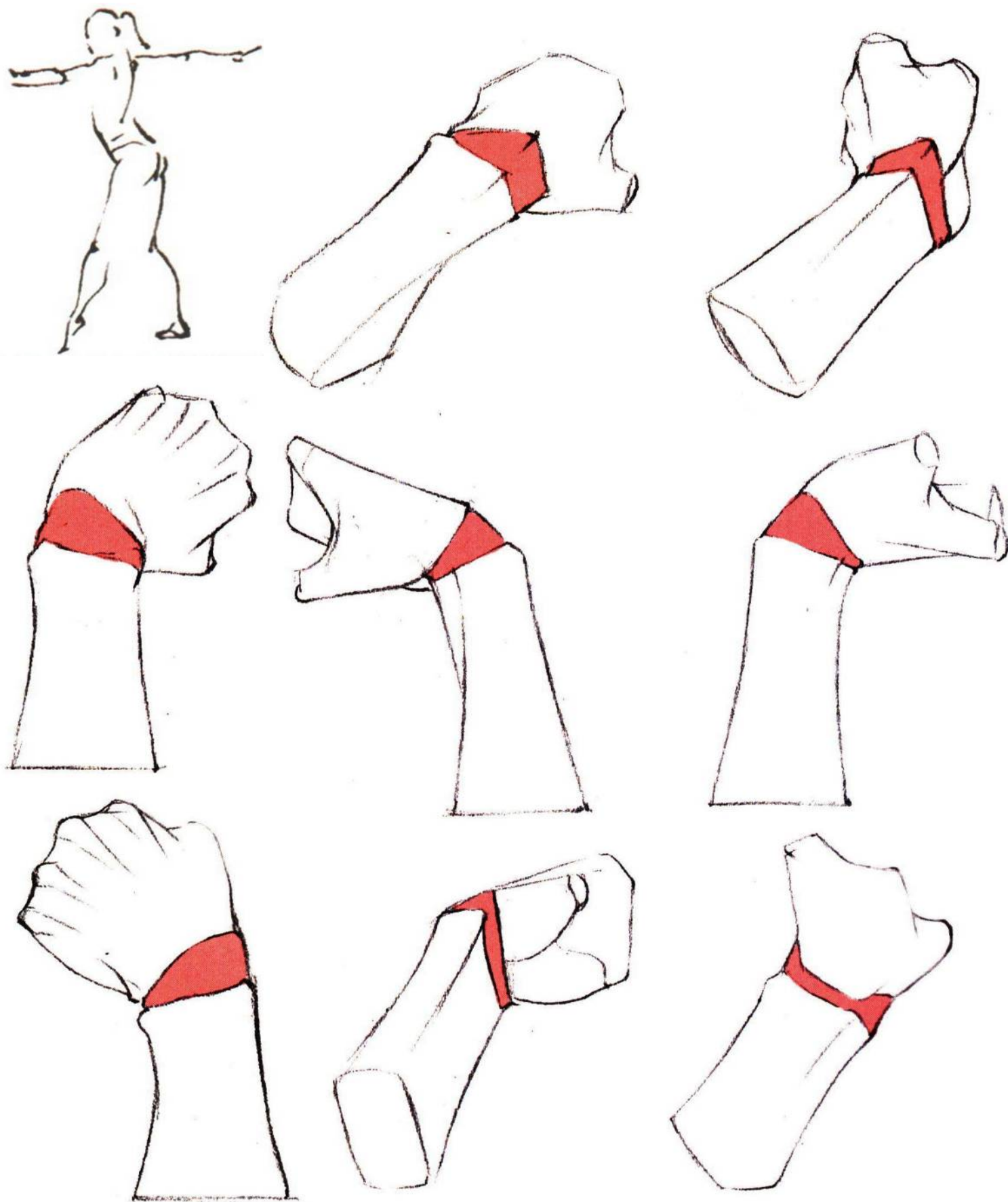
The length of the first phalanx of all fingers except the thumb is equal to the total length of the upper two phalanges. The length of the index finger is equal to the width of the metacarpal knuckle, and the length of the little finger is approximately the width of the wrist.



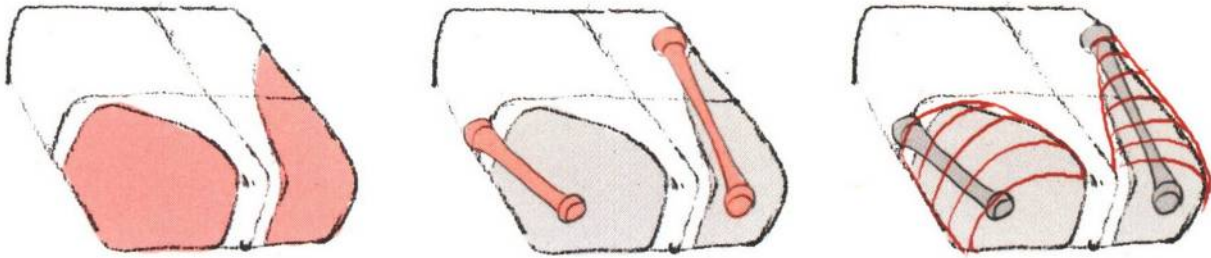
The wrist consists of eight small bones, which we can simplify to a soft square body set in the wrist.

03 Structure of the wrist

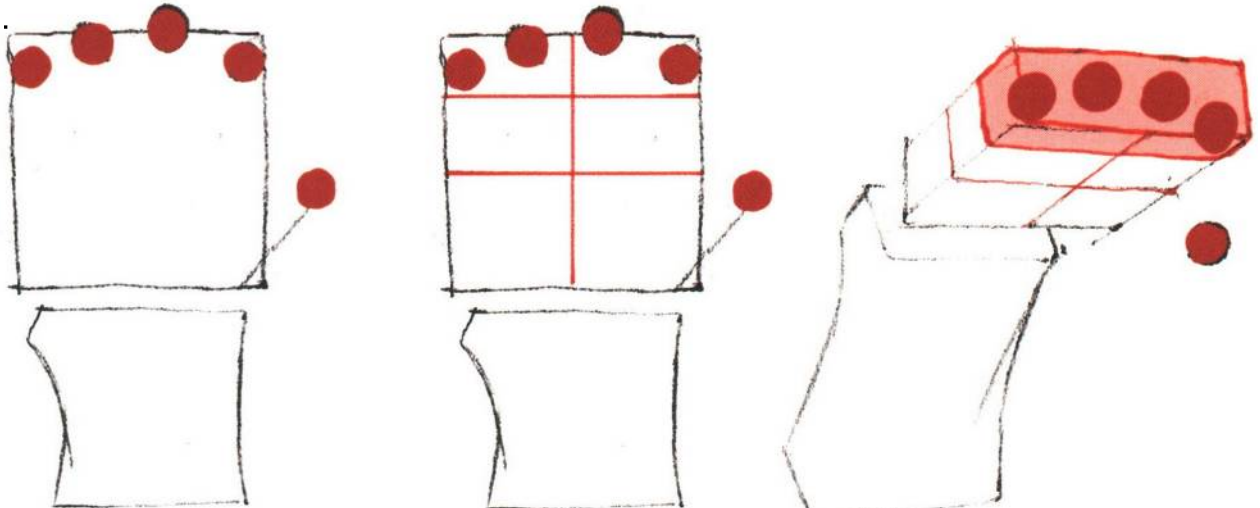
When you move your hand at different angles, the squares of the wrist will be pressed and pulled accordingly. When drawing the wrist, it is important to show the form.



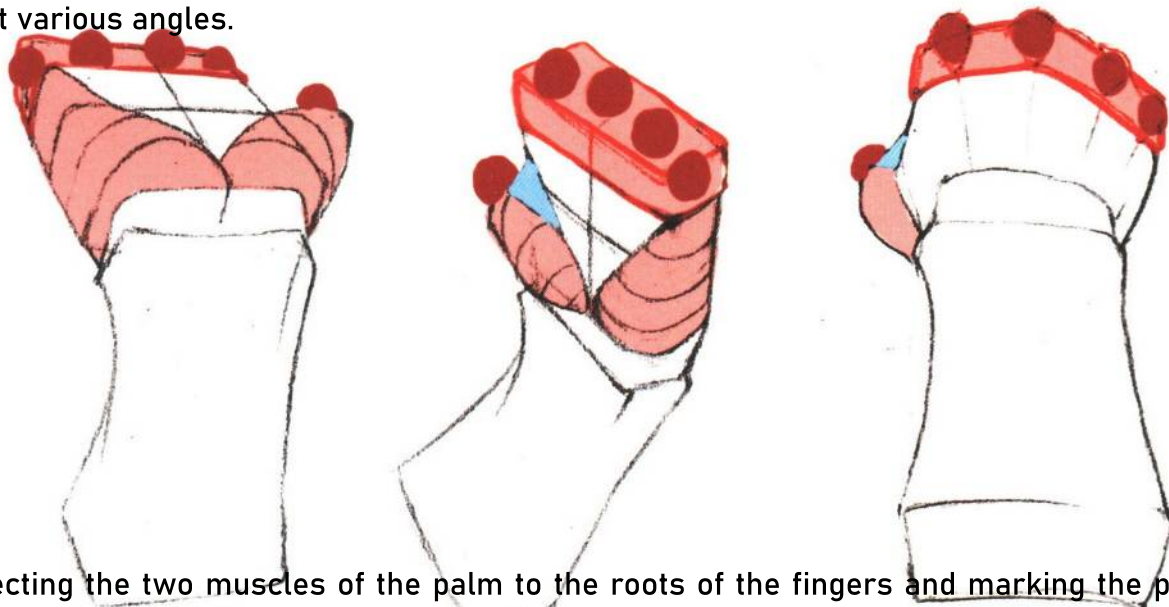
04 The structure of the palm



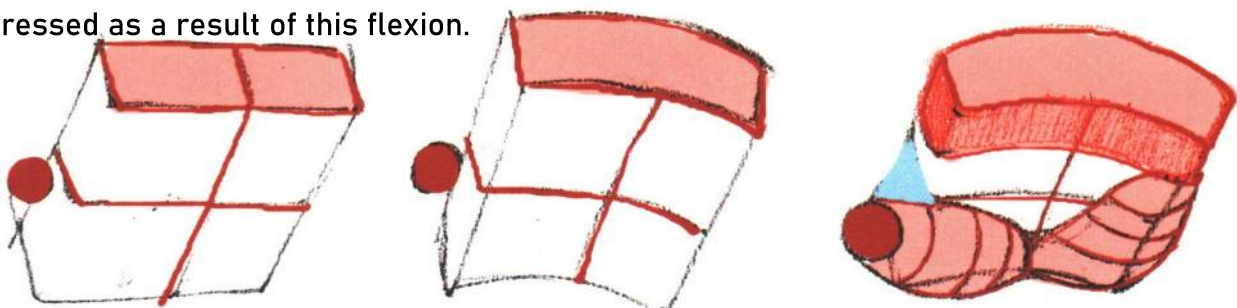
The palm of the hand can simply be visualized as a cube, divided by a cross, and the two muscles of the thumb and the pinkie found on each side of the hand, which rise and fall with the movement of the hand.



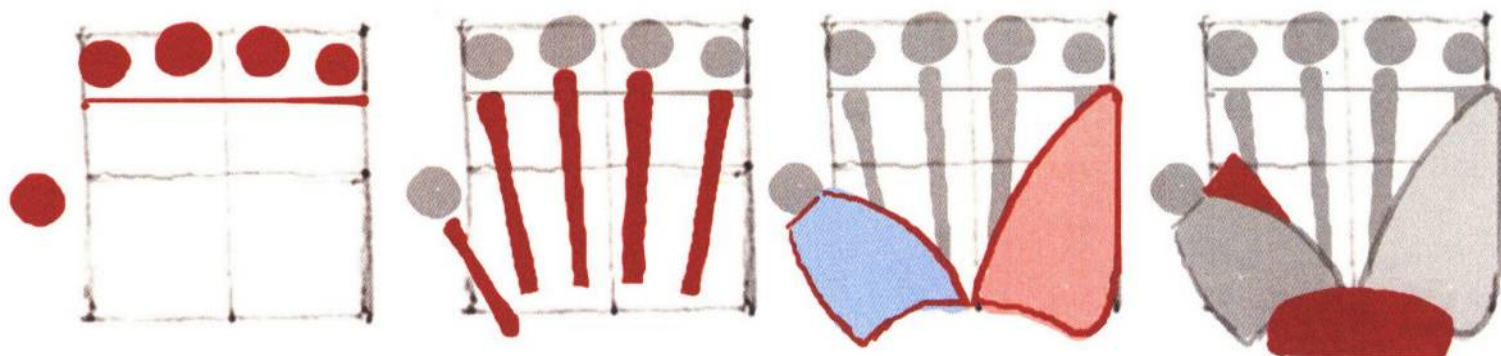
The roots of the fingers are hidden in the palm surface, and their positions are staggered. To make a good drawing of the fingers, we can first familiarize ourselves with the position of the roots of the fingers at various angles.



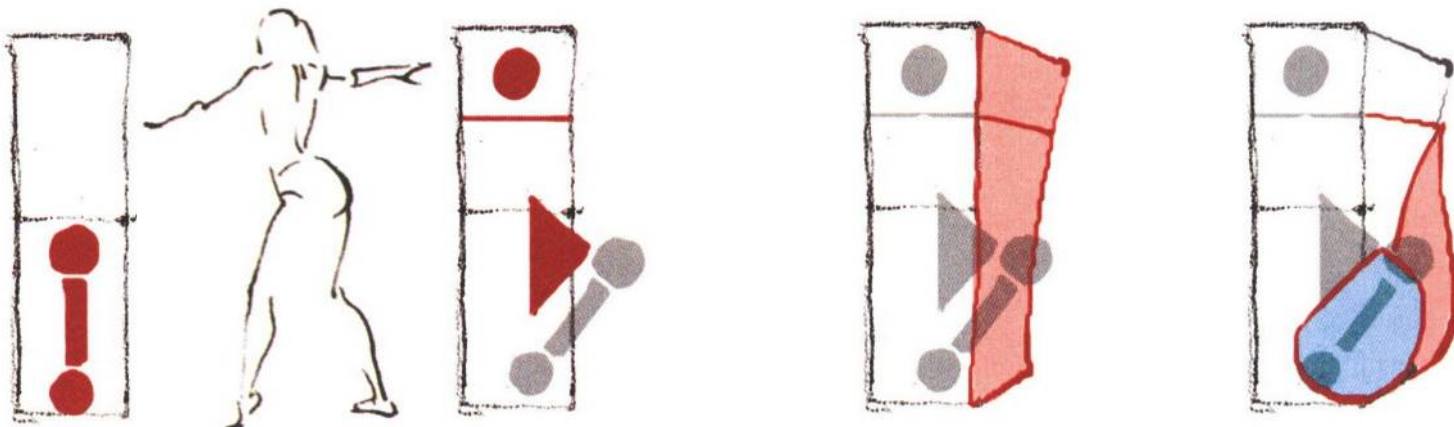
By connecting the two muscles of the palm to the roots of the fingers and marking the position of the tiger's mouth, the structure of the palm will be clear. The surface of the palm is not completely static; it flexes during certain movements of the hand, and the muscles of the thumb and pinky are compressed as a result of this flexion.



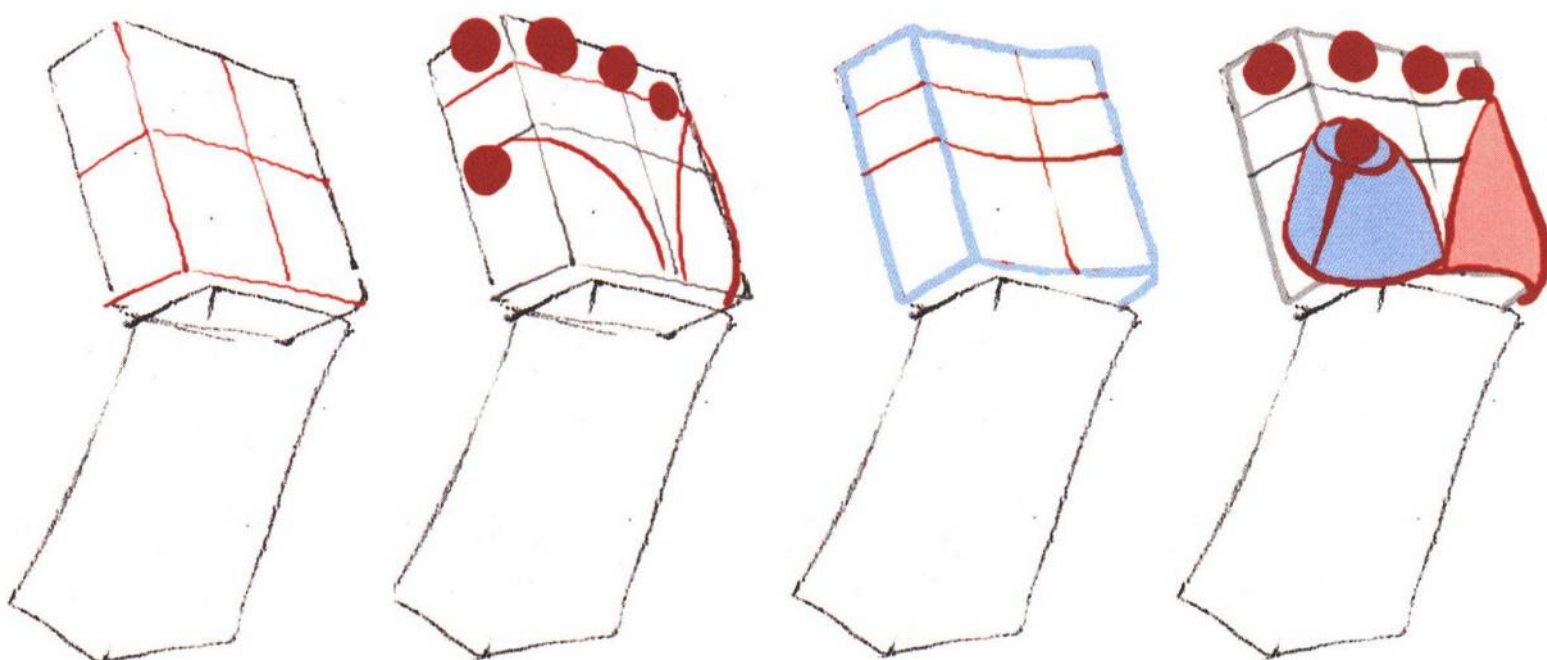
In the process of understanding the structure of the palm, we need to understand the position of the root of the fingers, the distribution of the bones in the palm and the undulation of the muscles on the palm surface, and we need to grasp the details of the perspective relationship between the tiger's mouth and the wrist.



In the palm of the hand, the most frequent activity is the area where the thumb is located, and when the thumb moves, the triangle of the tiger's mouth will also have corresponding changes. When the little finger moves, the shape of the entire palm surface changes. When the thumb and the pinky move, the associated muscles also move.

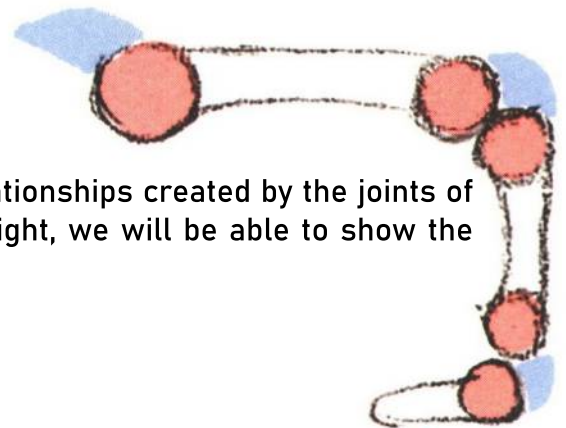


In order to understand the movement of the palm, we can think of the palm as a cube, and when the cube changes due to movement, the muscles and bones within it are displaced. The palm of the hand is very limited range of motion, grasp the palm of the simple rule of change of movement, the subsequent addition of fingers and wrist when the whole hand state can be more accurately expressed.

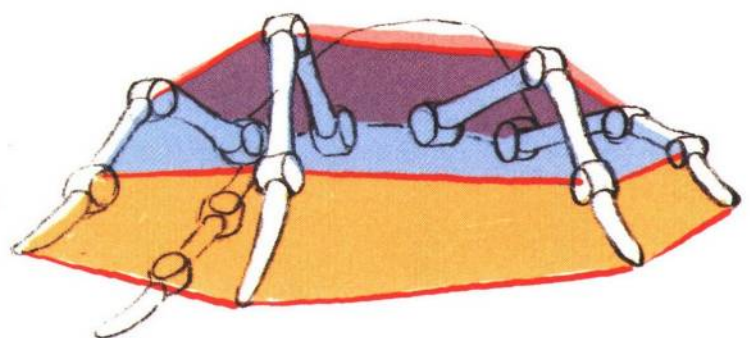
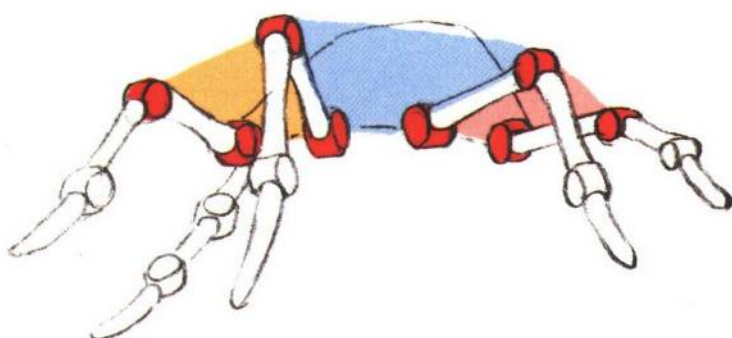
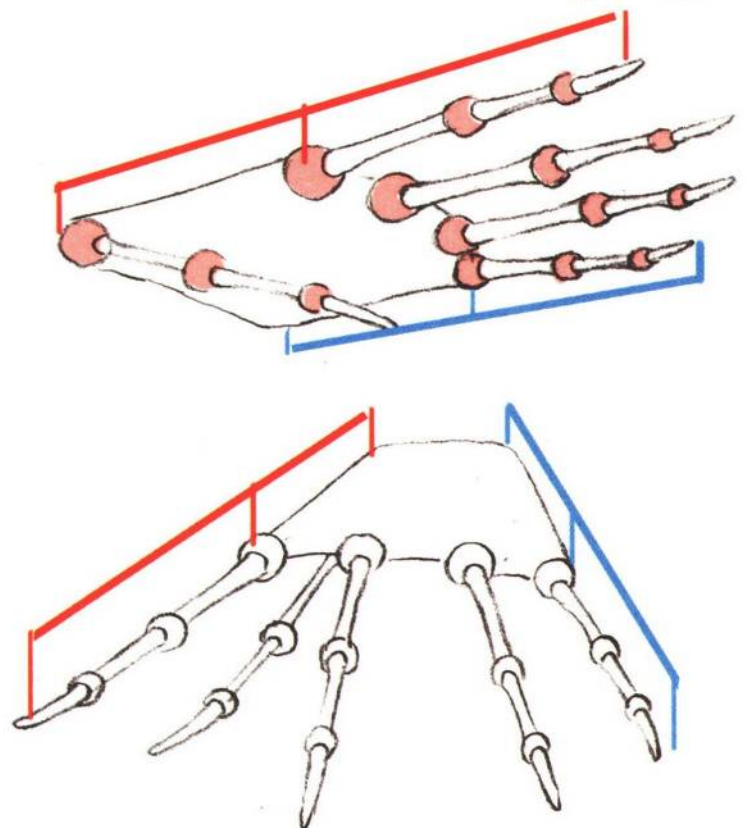
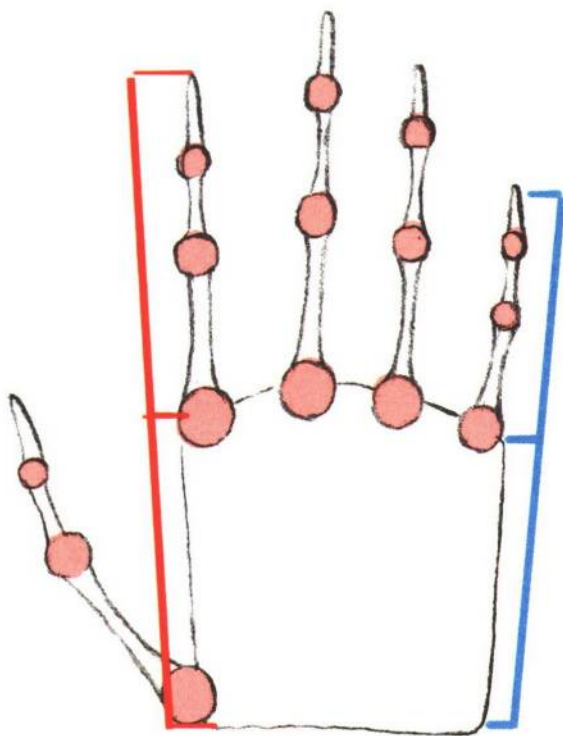


05 The structure of the fingers

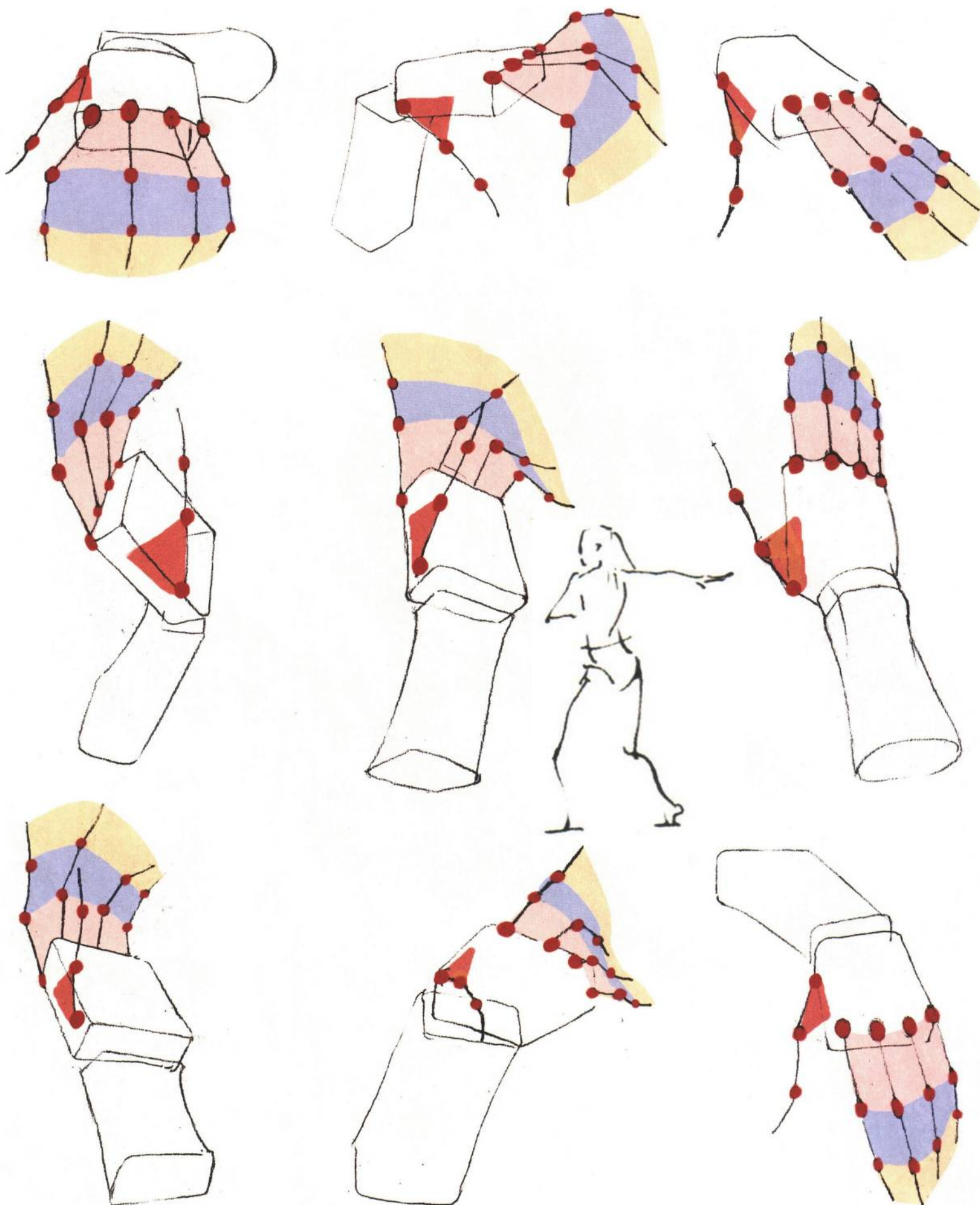
Drawing the fingers is the most difficult part of drawing the whole hand, so we can understand the structure of the fingers before we draw them. With the exception of the thumb, the length of the first phalanx of the fingers is equal to the total length of the other two phalanges, and we need to control this relationship as the fingers bend. The fingers need to be drawn in such a way that they harmonize with the palm, and this requires that the lengths of the fingers be carefully controlled to match the lengths of the bones that are hidden in the palm as the perspective changes.

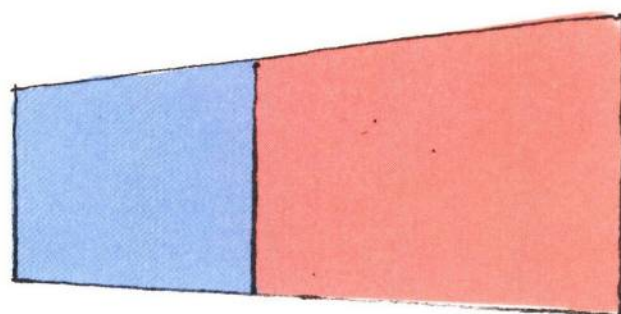
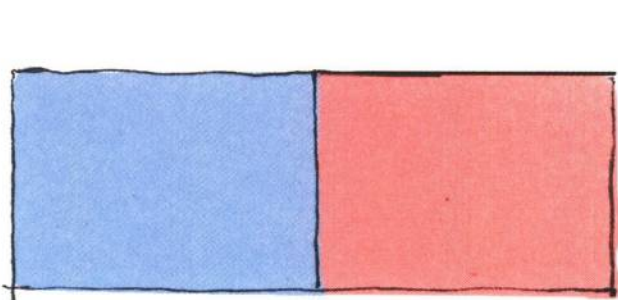


When drawing the fingers, we can look at the fan-shaped relationships created by the joints of the fingers, and if we can get the fan-shaped relationships right, we will be able to show the proportions of the fingers as they move.



This is an exercise to draw a fan-shaped relationship between the joints of the fingers, which will help you to better control the proportionality of the whole hand.

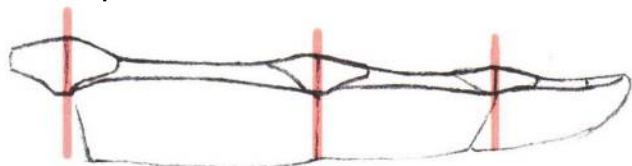




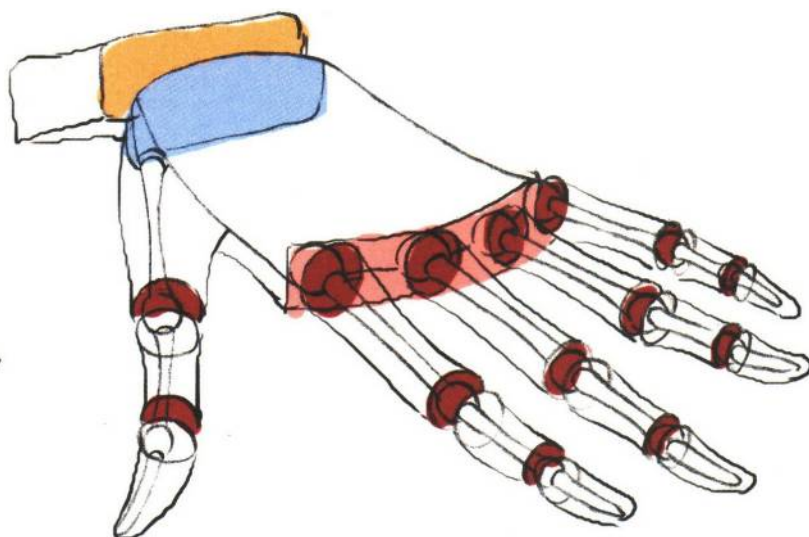
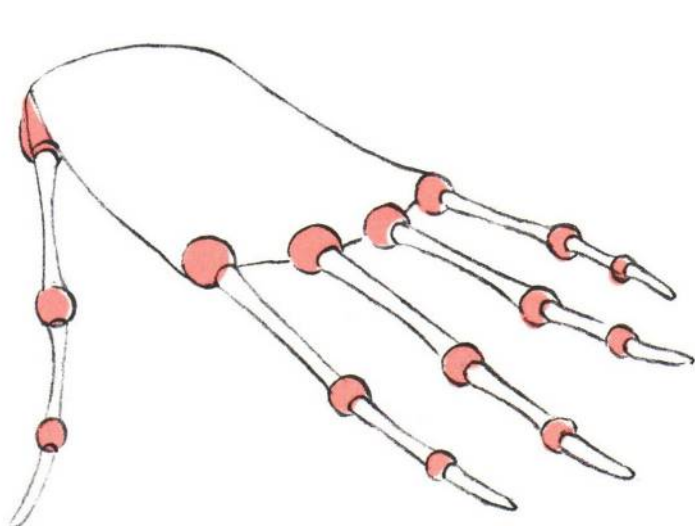
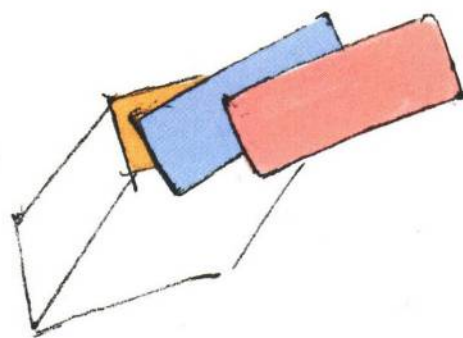
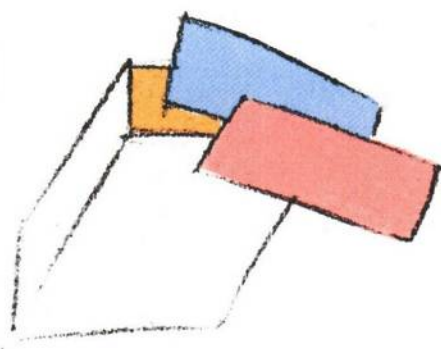
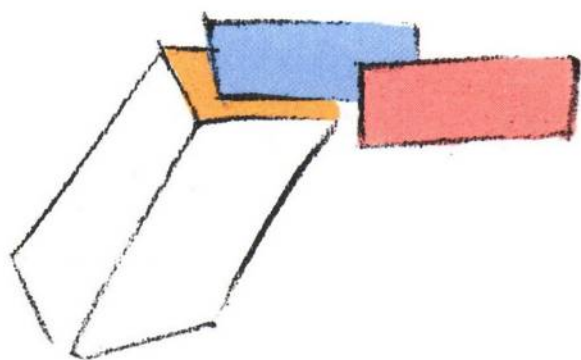
The perspective of the finger can be understood in this way: the length of the red and blue areas is the same, and when a certain perspective change occurs, the length of the red and blue areas will change accordingly.



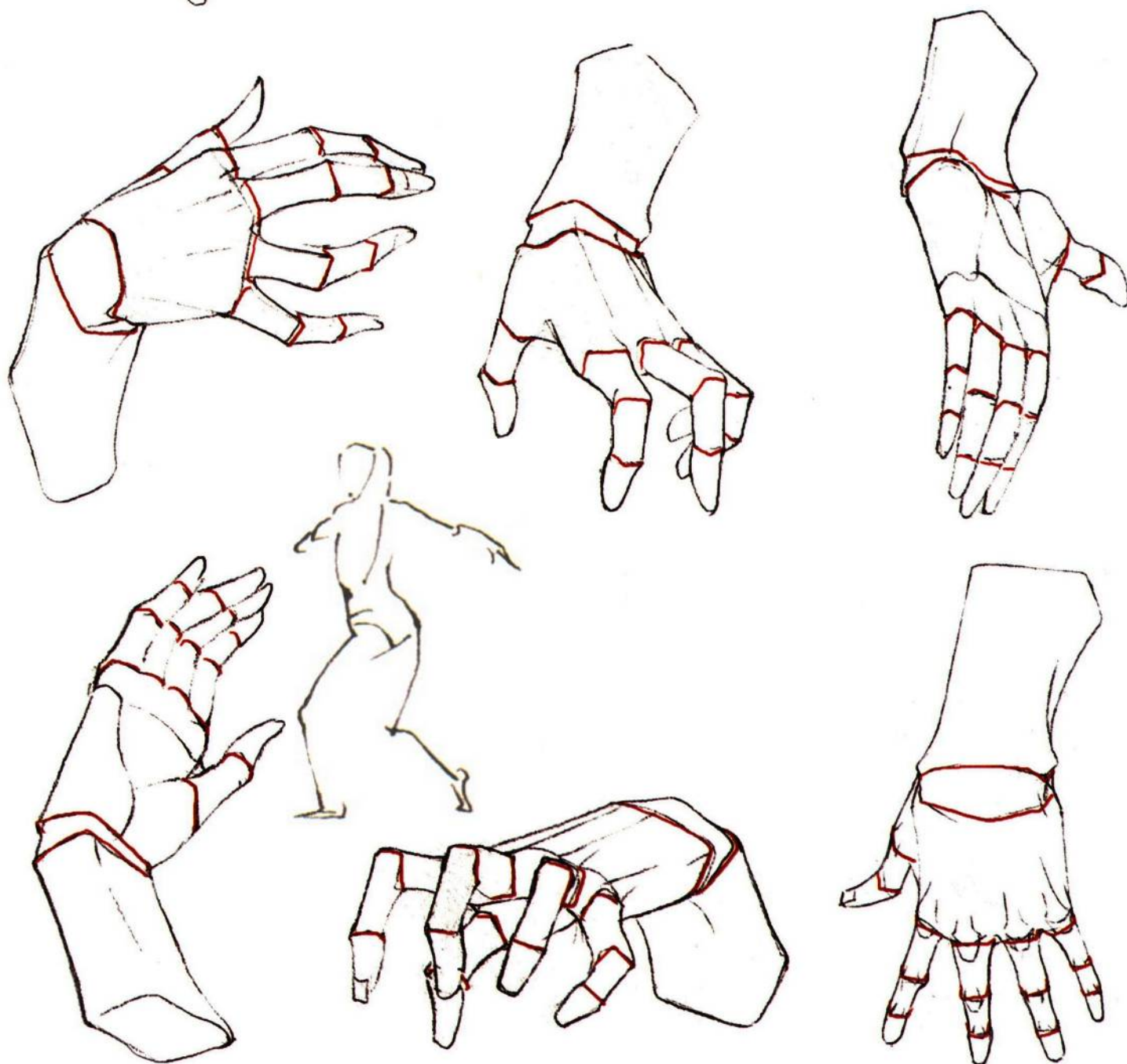
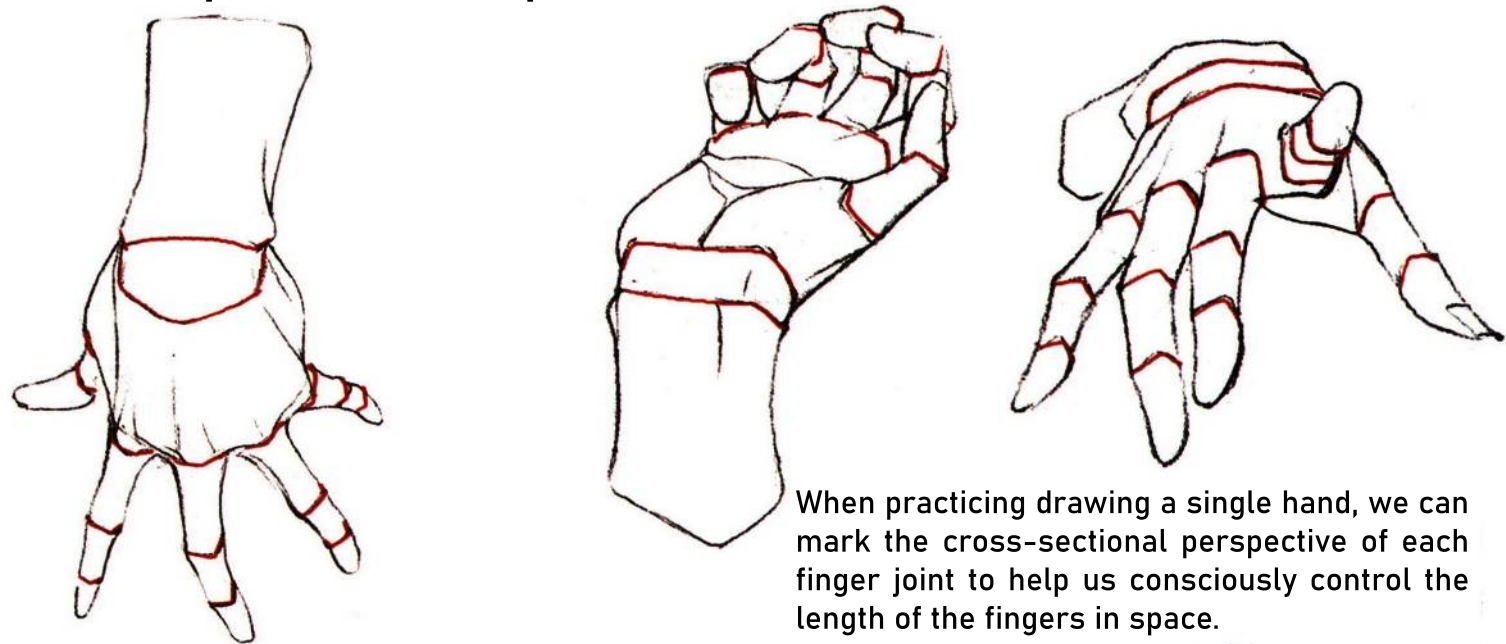
A finger in perspective has an extra cross-section, and the cross-section appears differently in different positions.



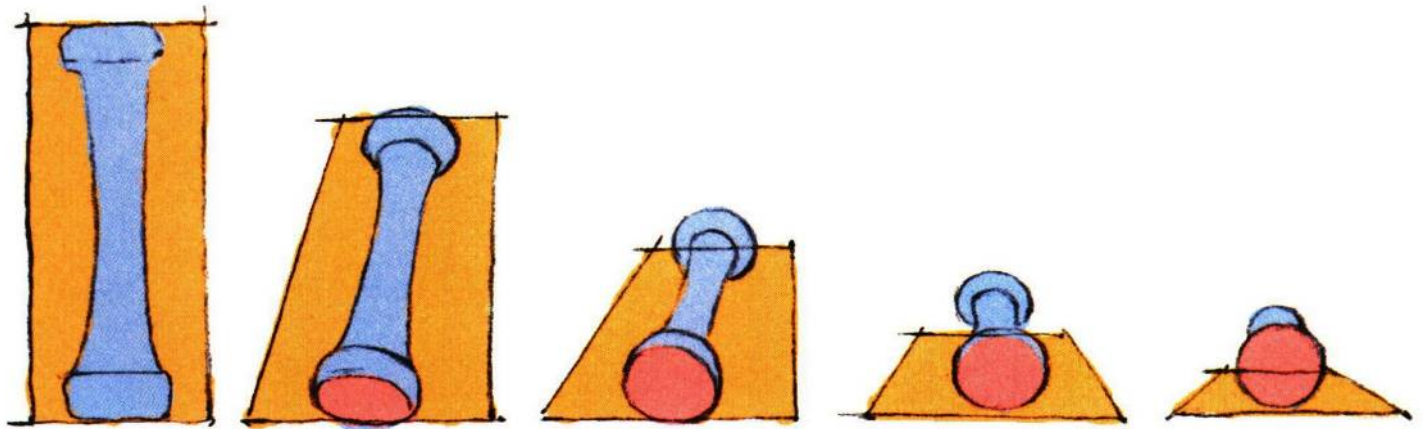
In order to better grasp the perspective of the hand, we can first understand the cross-section of the wrist, palm, and root of the finger, and express the perspective relationship of these cross-section under different perspective changes, which will play a big role in the subsequent expression of the perspective of the finger.



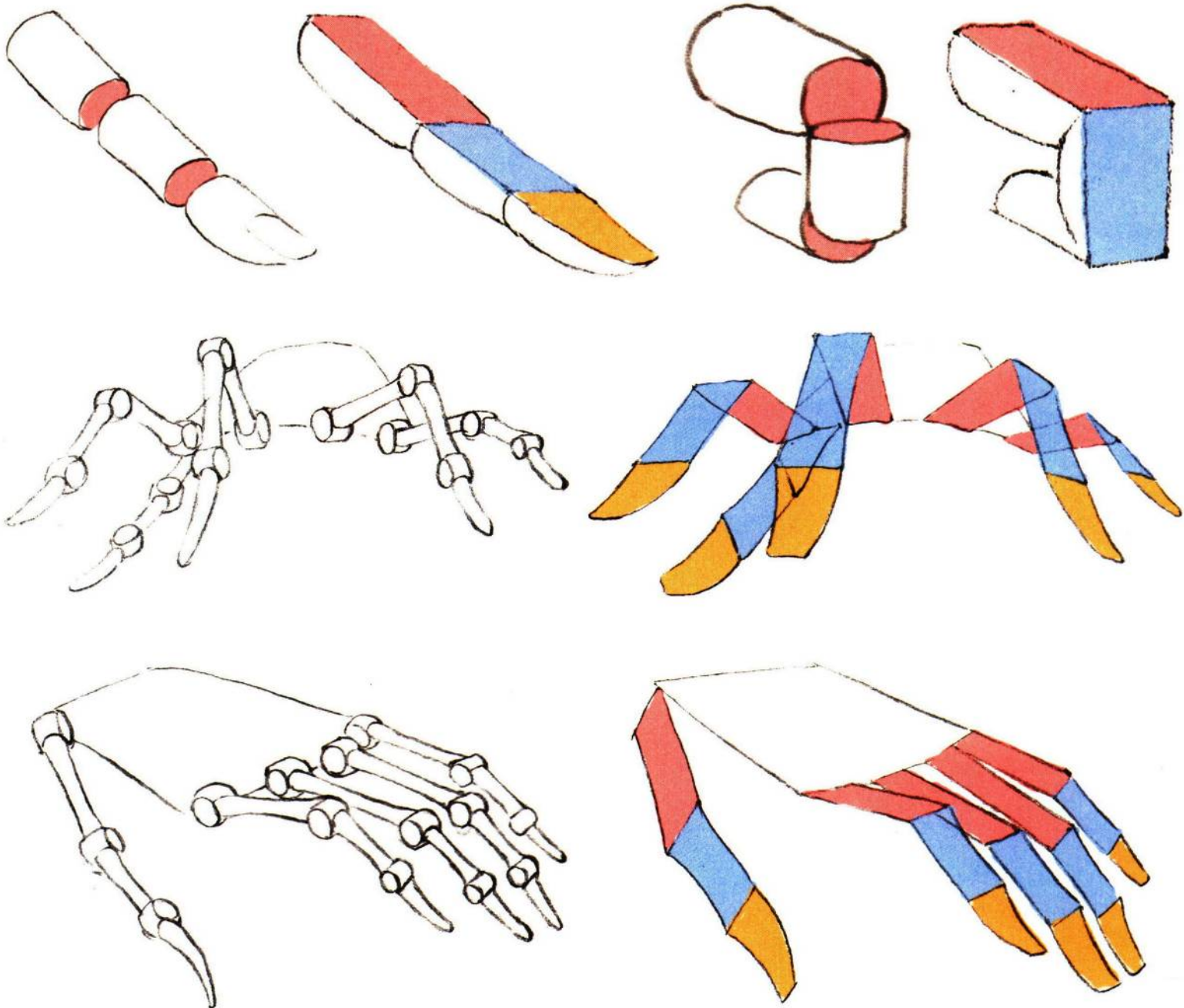
06 Spatial relationships of the hand



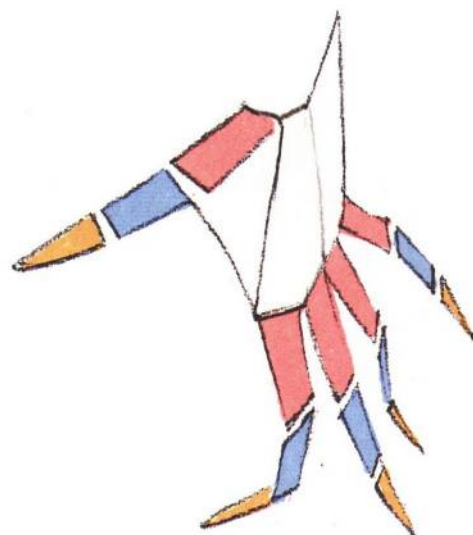
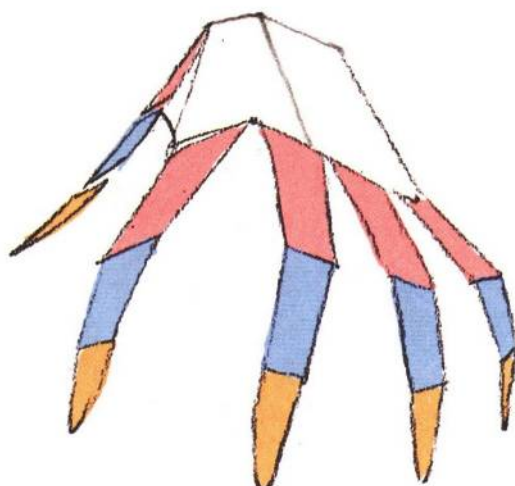
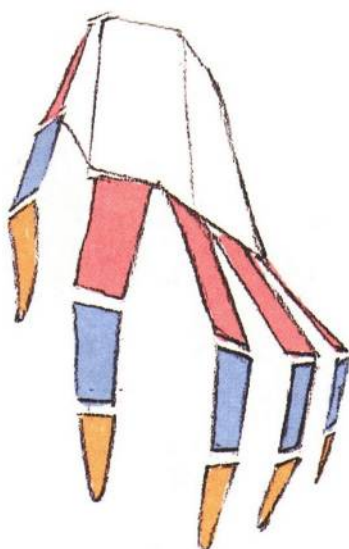
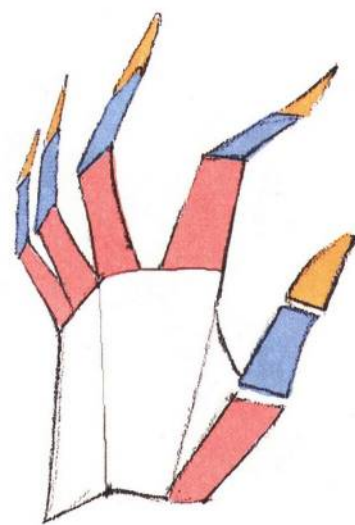
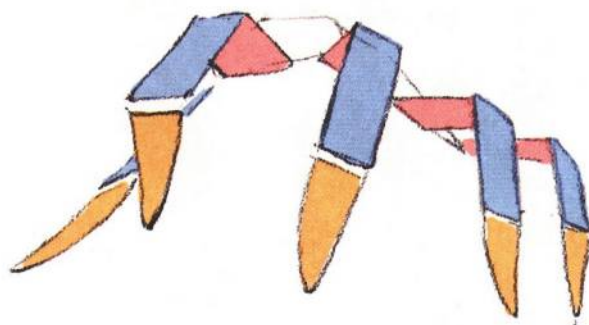
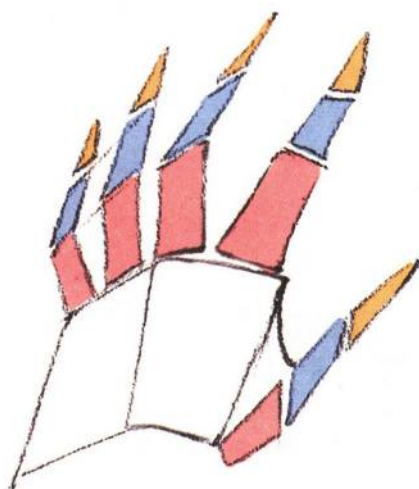
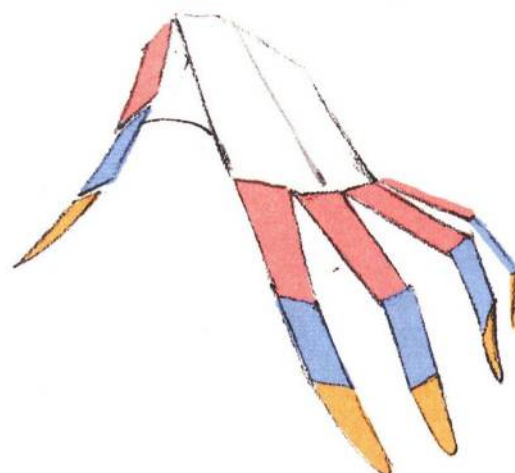
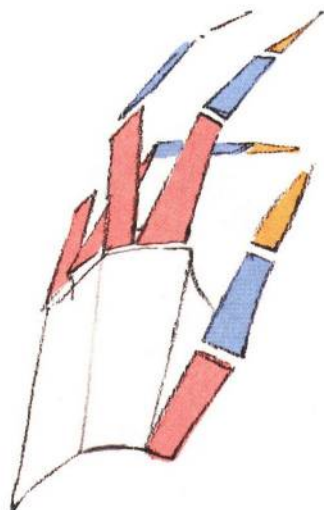
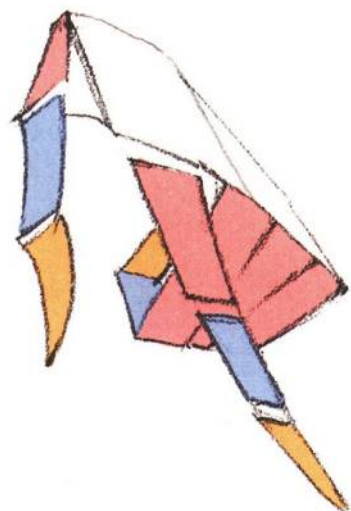
The perspective of the fingers affects the overall appearance of the hand. If we only see the finger as a cylinder, the cylinder will be broken when the finger turns, so here we combine the cylinder and the surface, the cylinder perspective generated by the movement of the finger bone is simply processed into a surface perspective.



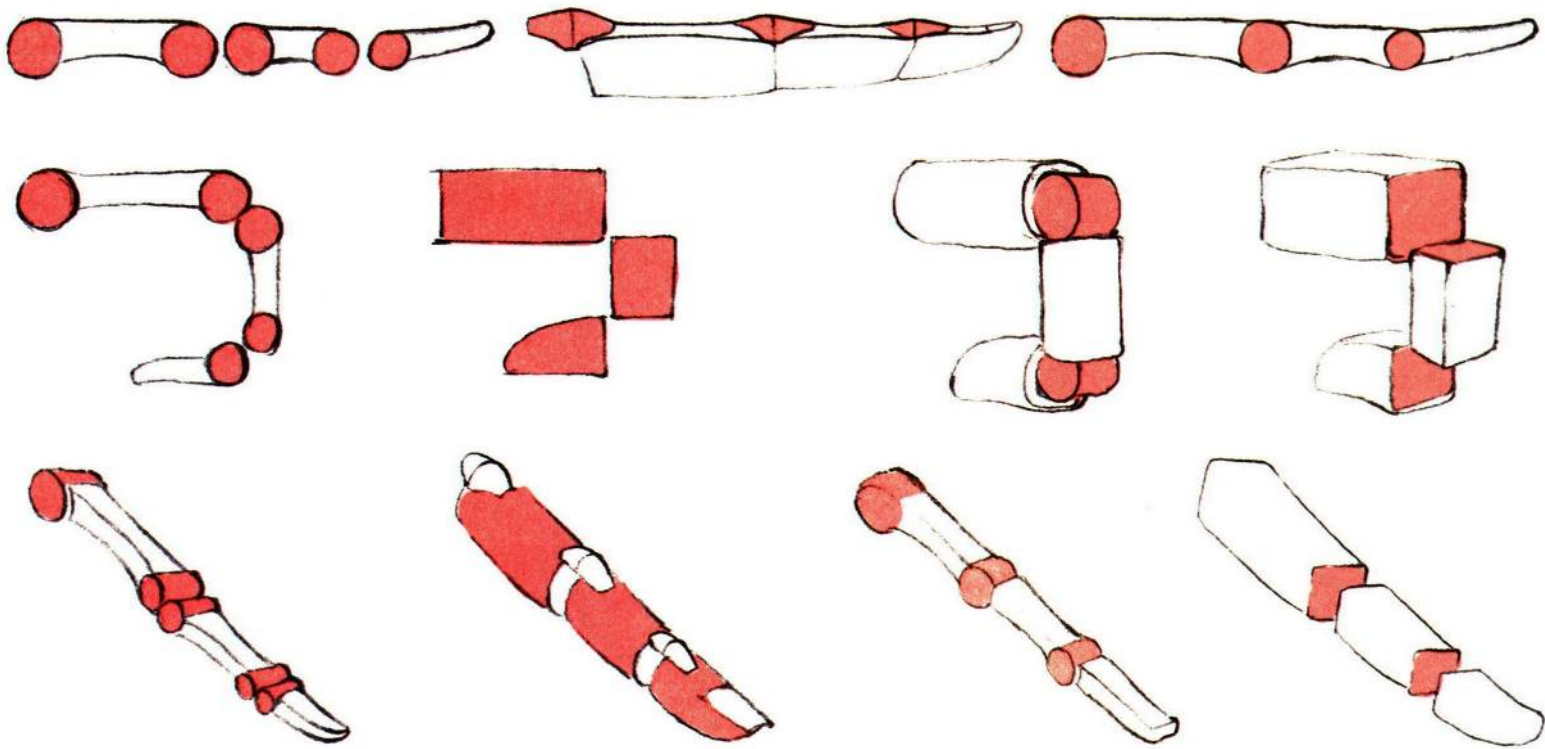
When we transform the local three-dimensional perspective of the finger joints into the overall perspective of the surface, we can grasp the spatial relationship of the hand more quickly.



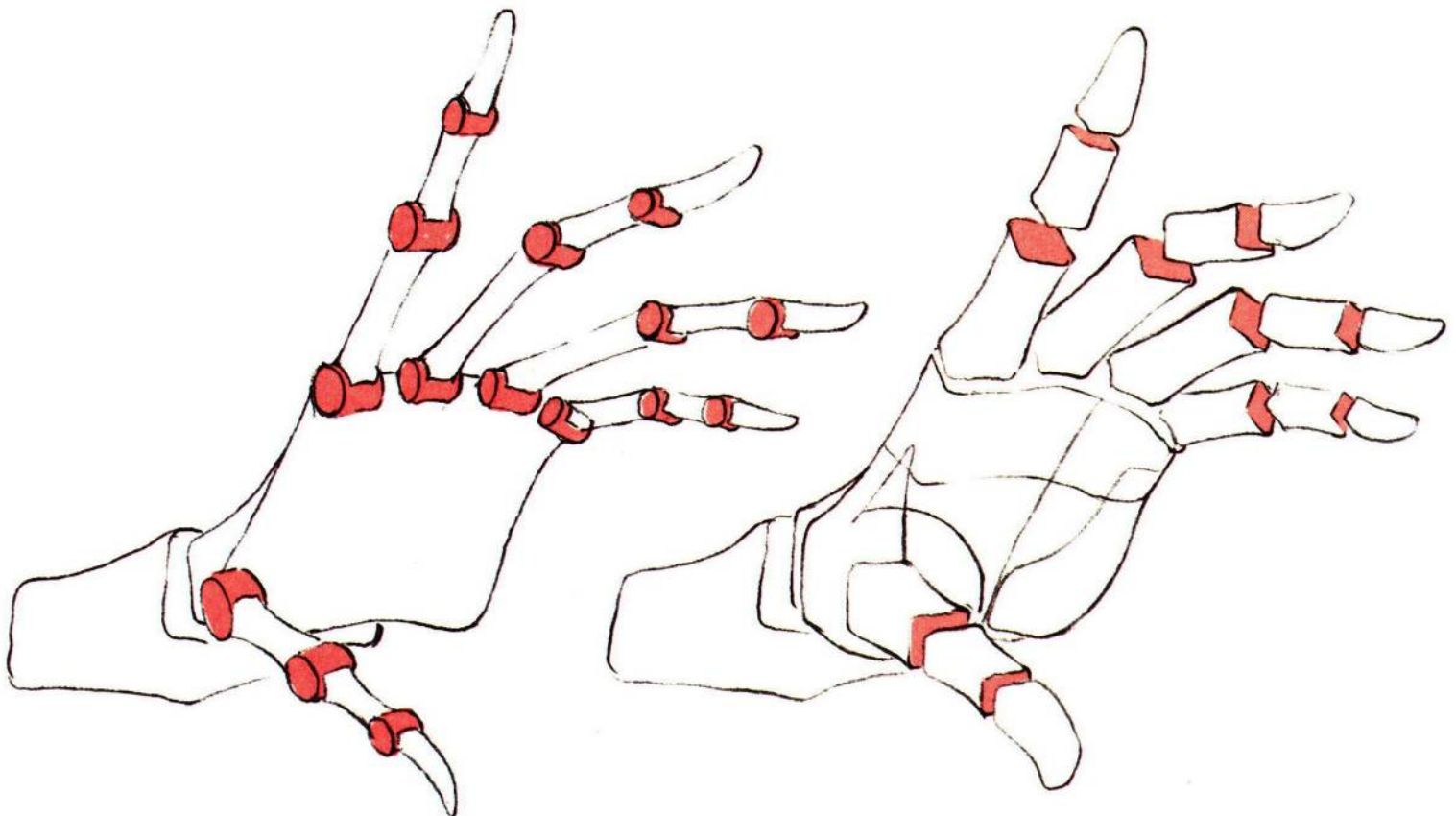
Hand for the slice processing can let us better feel each perspective state under the hand of the relationship between the transition, when we control the relationship between the transition, it can be applied to the expression of the real hand perspective changes.



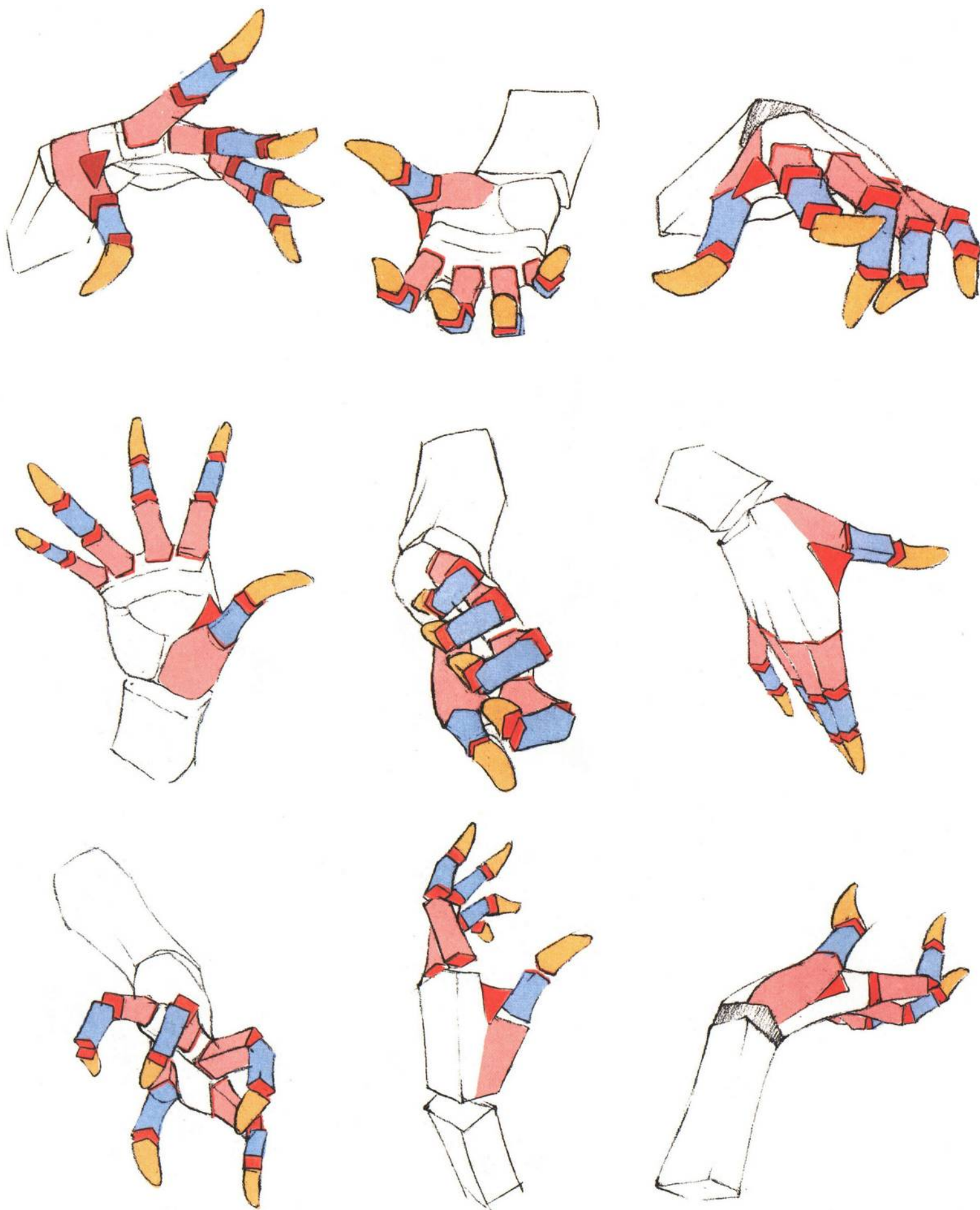
In order to better shape the hand, we can also sculpt the fingers in three dimensions, which also helps us to control the perspective of the details of the fingers. This helps us to control the perspective of the details of the fingers.



When we depict the fingers in three dimensions, we can omit the joints of each finger, and at the same time enhance the thickness of each finger.



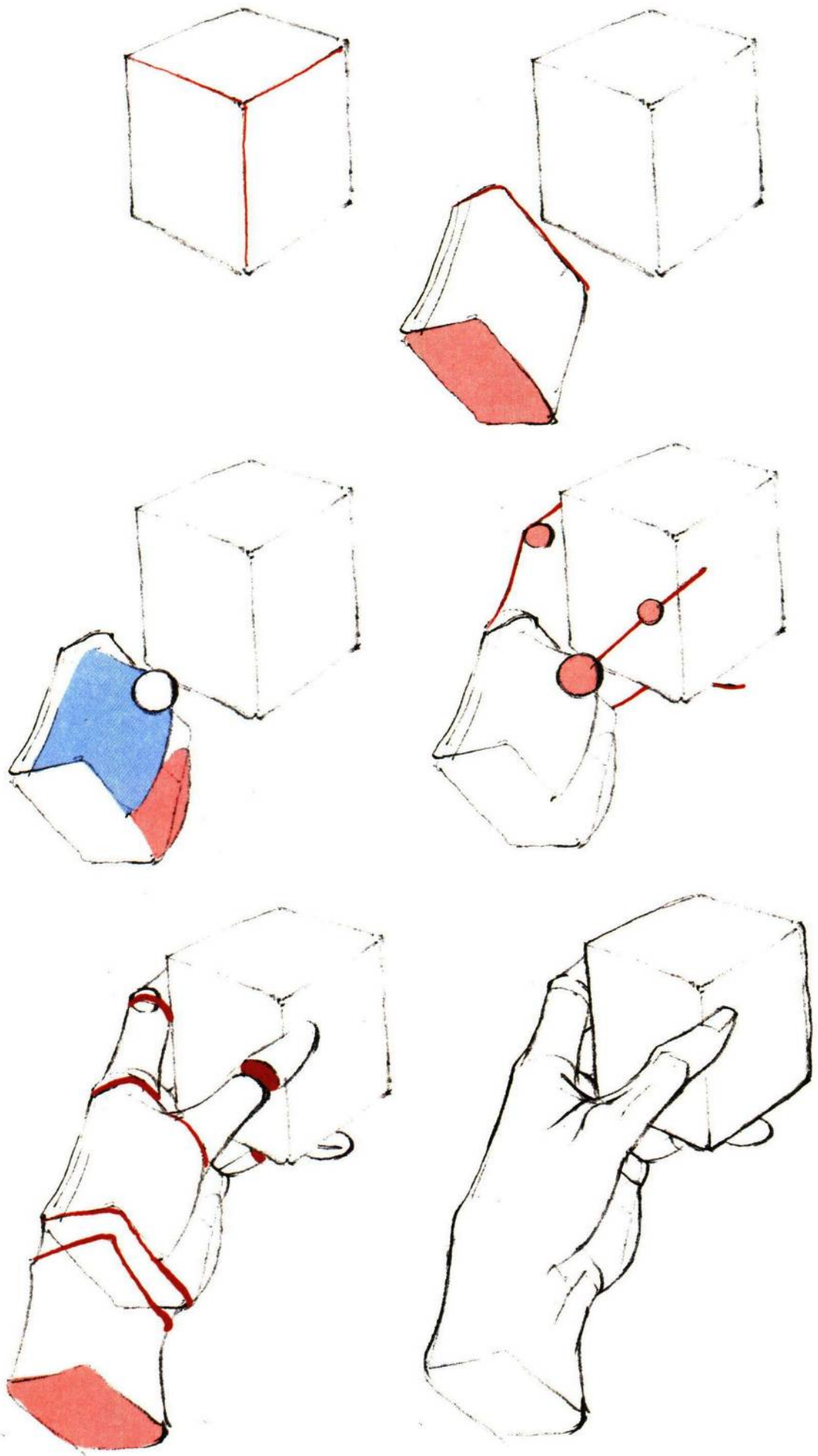
When drawing each finger, we need to understand the pattern of finger changes and consider the orientation of the squares representing the joints and the corresponding spatial relationships.



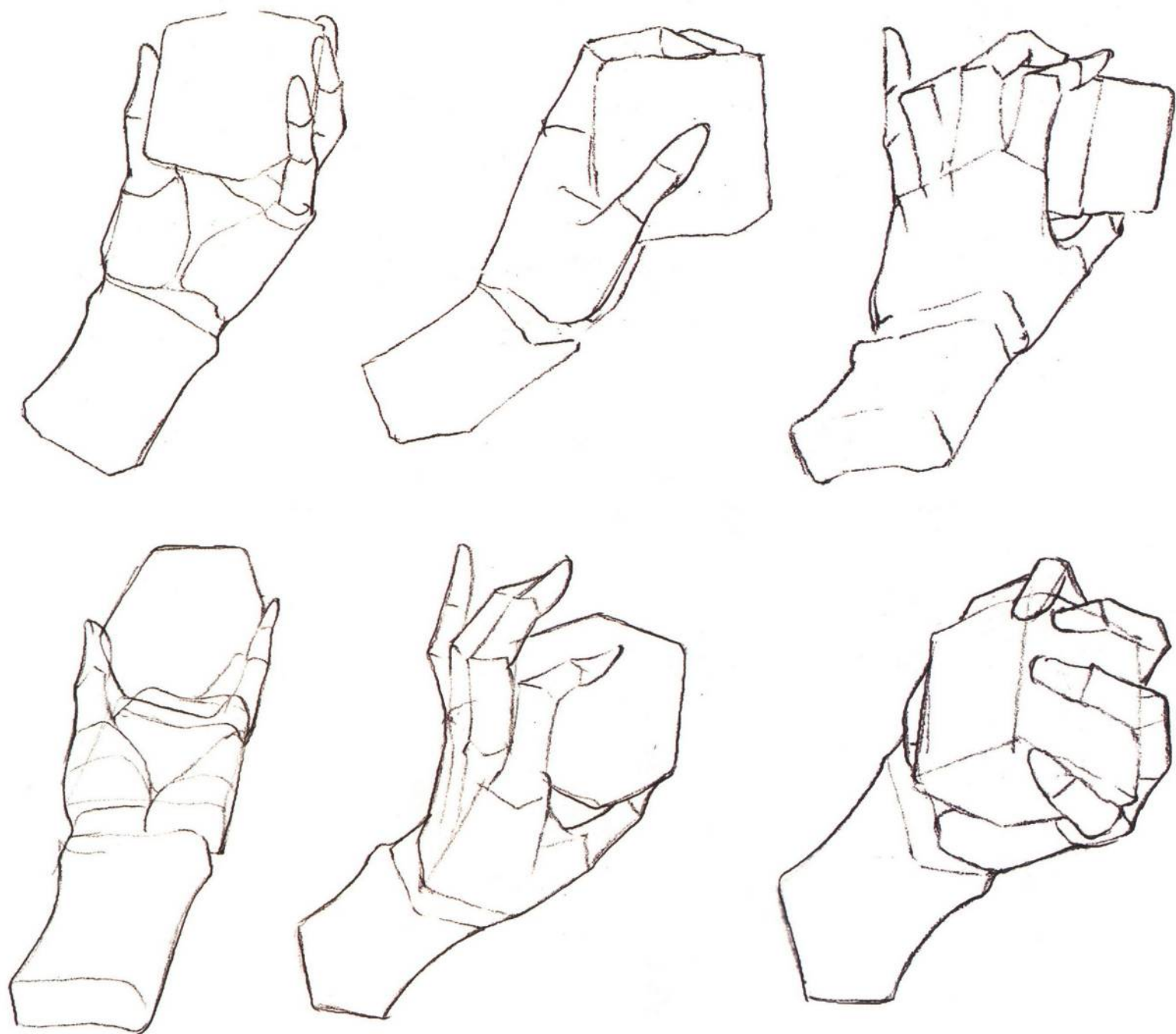
07 Depicting the hand holding an object exercise

Determine the volume of the object you are drawing, and then draw a cube representing the palm of the hand (make sure the perspective of the cube is correct).

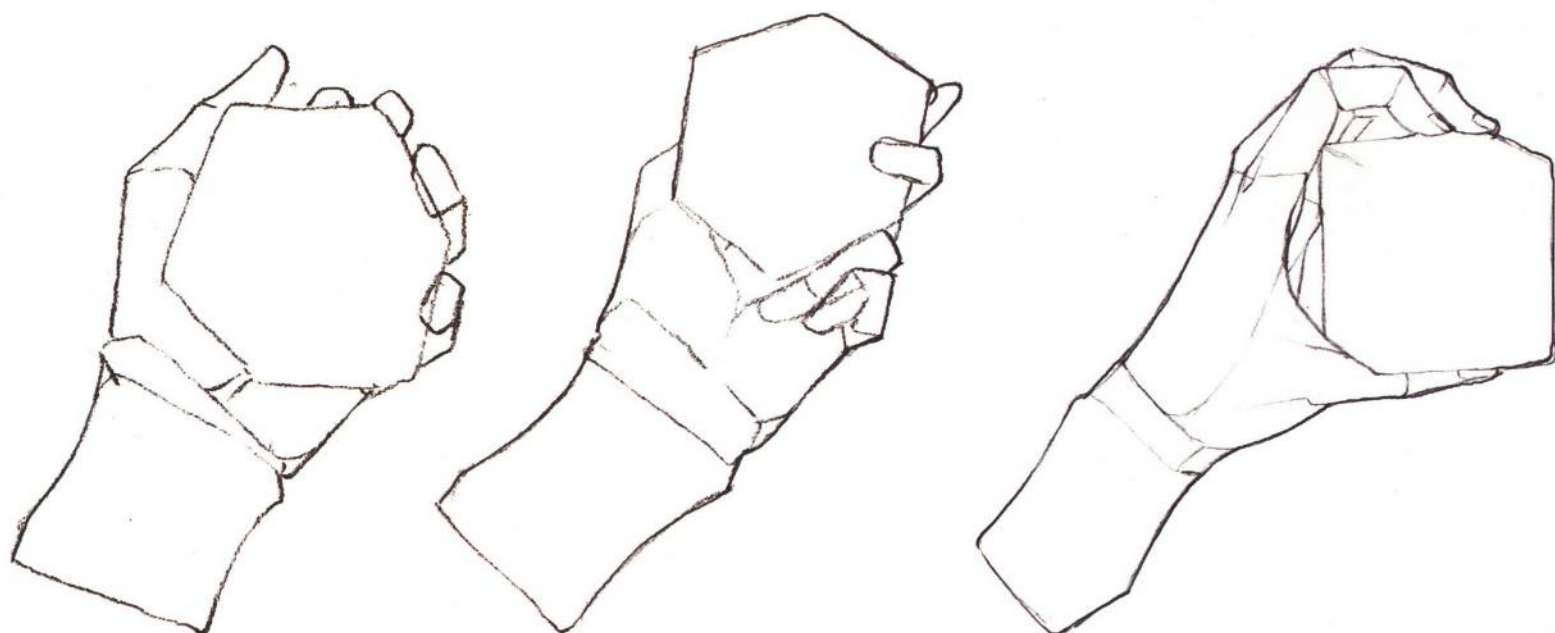
Add the two muscles of the thumb and the pinky to the cube, locate the roots of the fingers and mark the fingers and their joints, and locate the points of contact between the fingers and the object.



Mark the perspective and curvature of each finger joint, and add the details in the bracket.

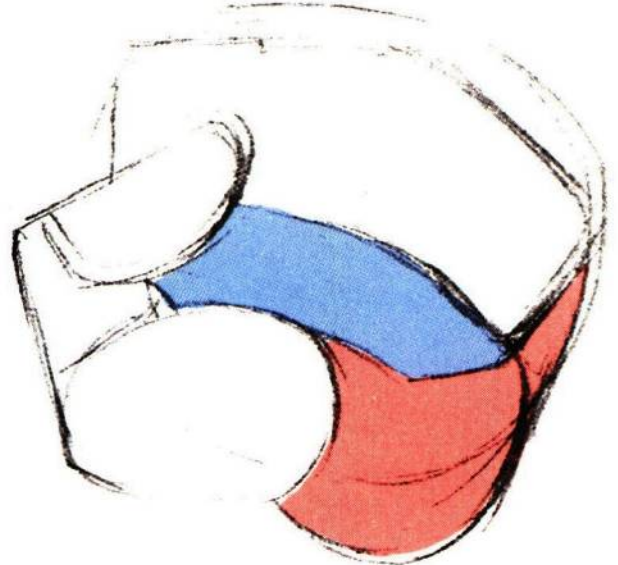
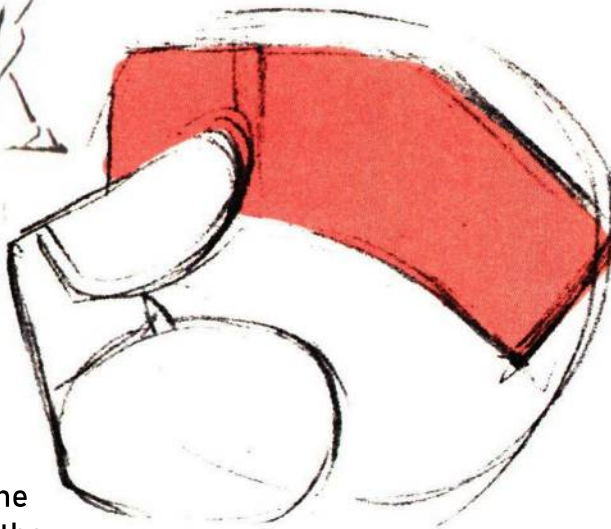
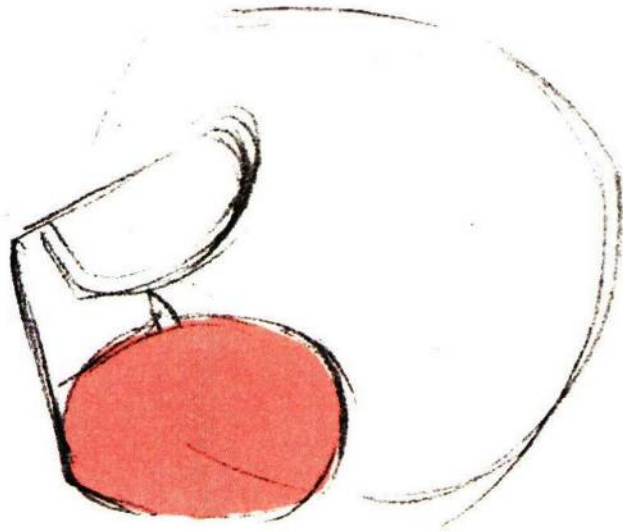
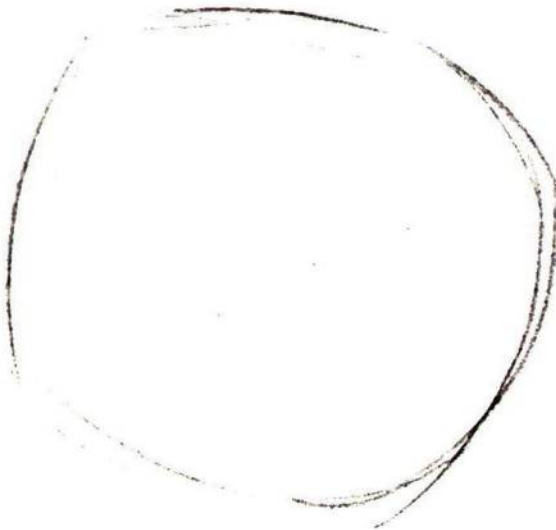


Drawing a hand grasping an object requires a lot of practice, we can refer to the picture above, with their own hands grasping a smaller object for multi-angle observation and drawing.

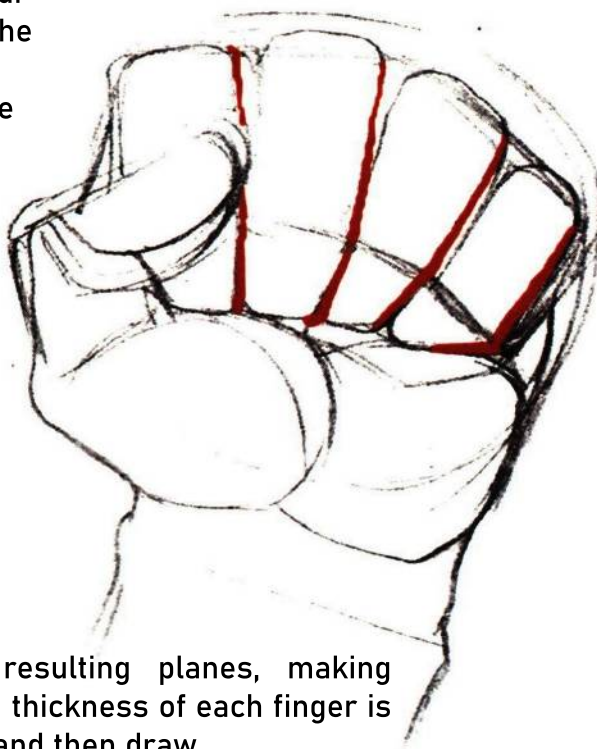


08 Exercises for drawing a clenched fist

Determine the general shape of the hand and find the position of the thumb.



Determine the positions of the remaining four fingers and the surfaces formed by the turns of the fingers.



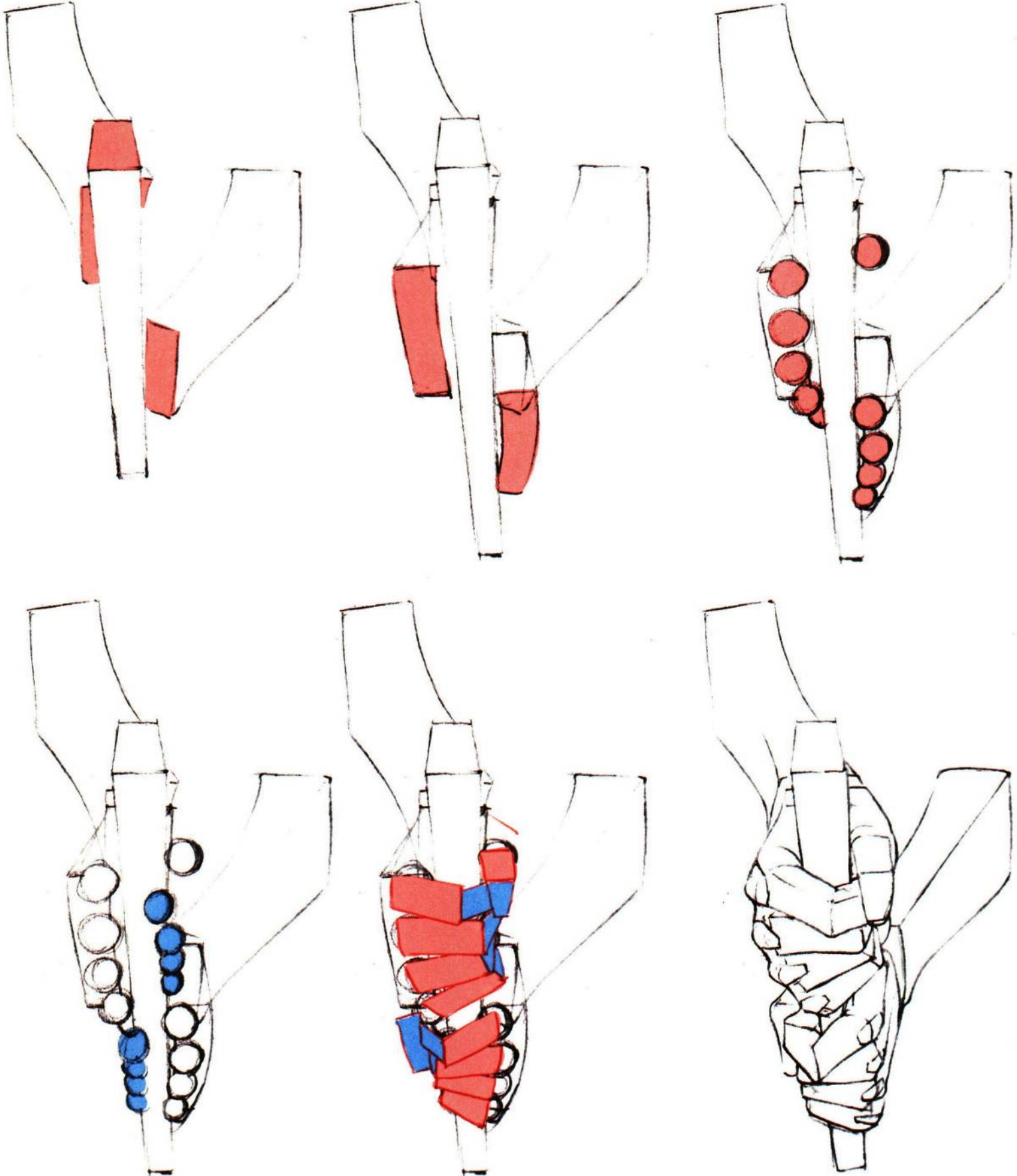
Divide the resulting planes, making sure that the thickness of each finger is reasonable, and then draw.

When drawing a hand with a clenched fist, we can pay more attention to the representation of the knuckle protrusions and the perspective of each knuckle protrusion.

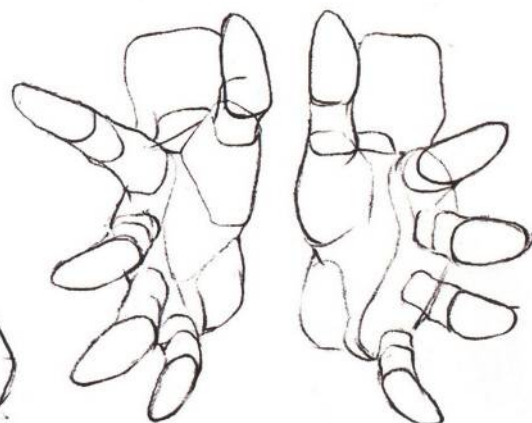
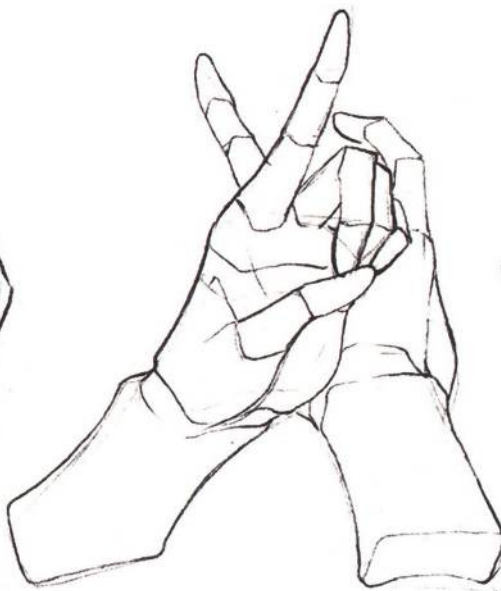
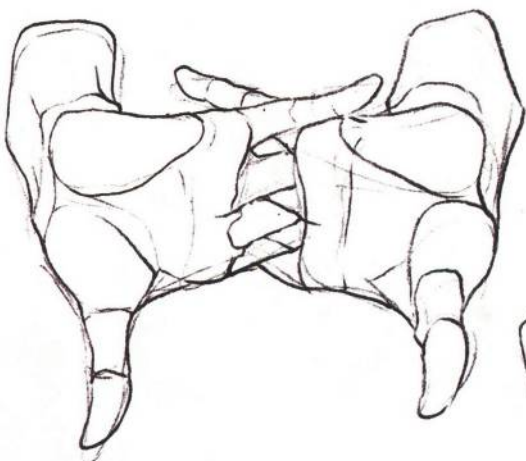
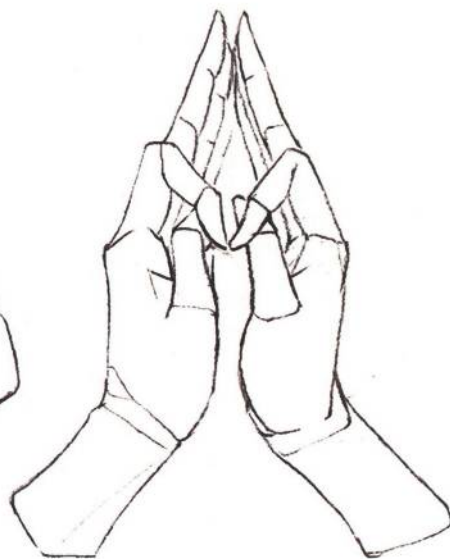
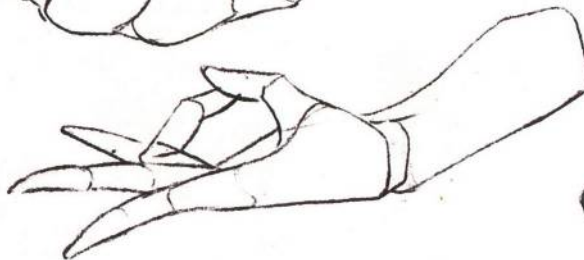
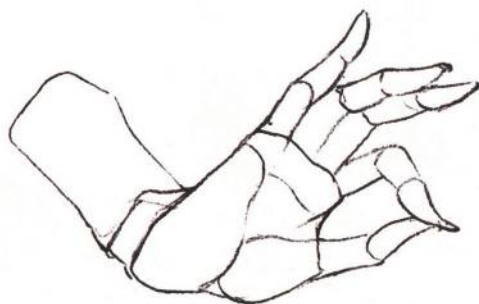
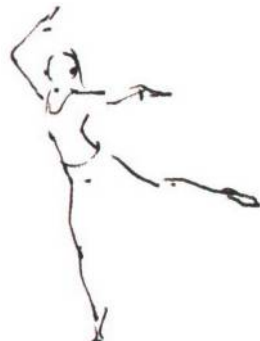


09 Two-handed Drawing Exercise

Determine the perspective of the wrist and the perspective of the object to be held, then find the position of the square representing the palm and the starting point of each finger. Then find the turning points of the fingers and slice the fingers to get a more intuitive three-dimensional support on which to refine.



In order to master the method of drawing hands, we need to do a lot of practice, we can try to do "100 hands practice" according to different needs. We can try to show the relationship between the hands, and in the process, we can emphasize the form of the palm and fingers.

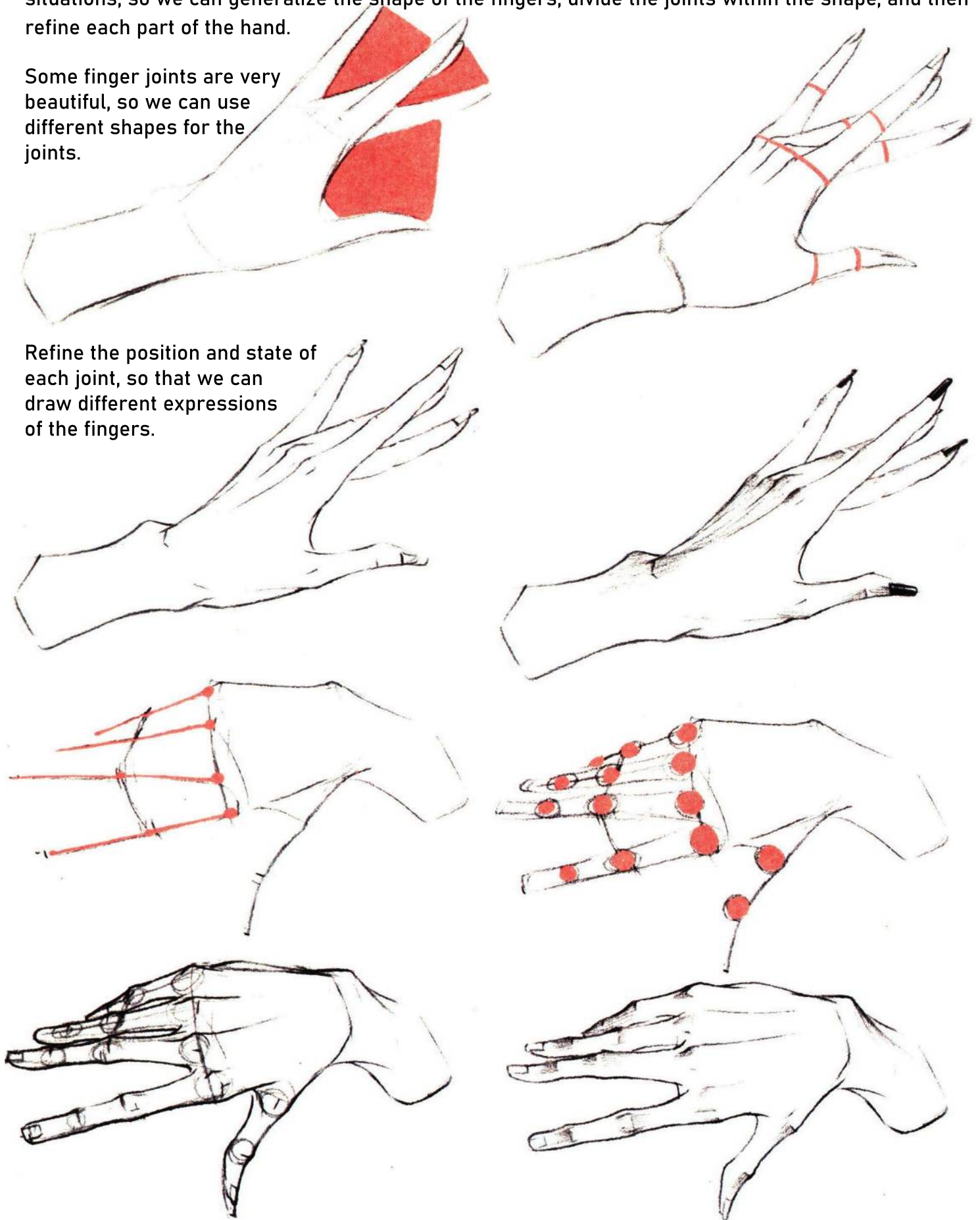


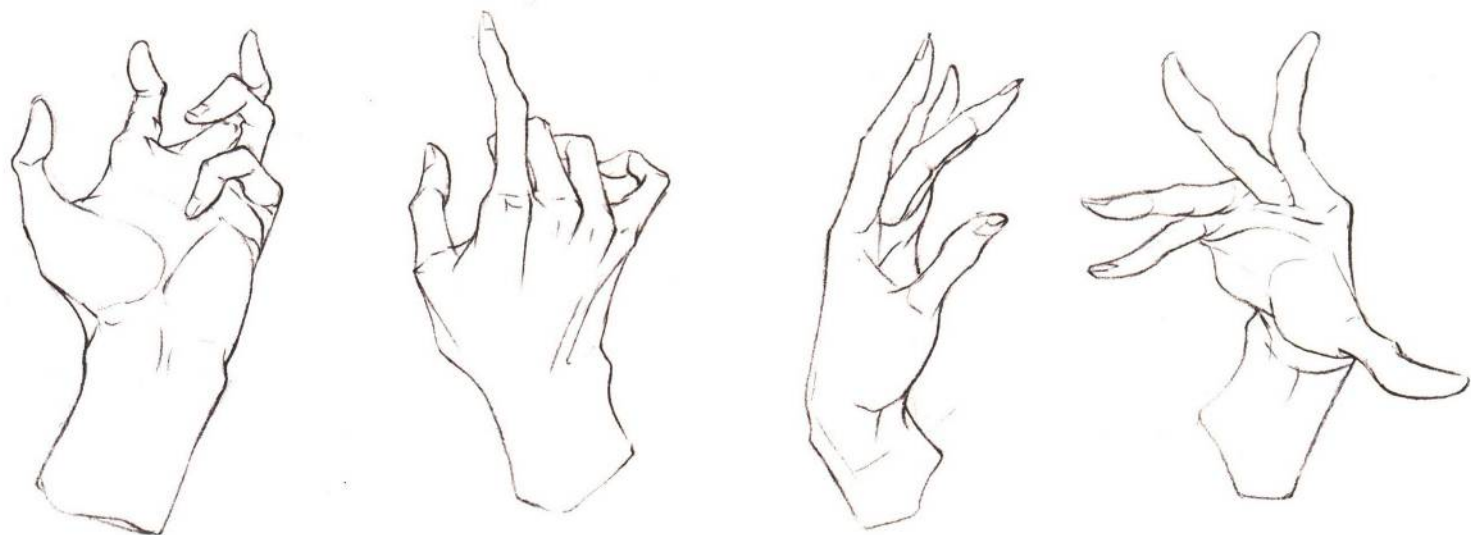
10 Hands of different shapes

After we have mastered the drawing of the hand's support to a certain extent, we can try to beautify the hand's fingers. Different shapes produce different results. Some fingers look better in certain situations, so we can generalize the shape of the fingers, divide the joints within the shape, and then refine each part of the hand.

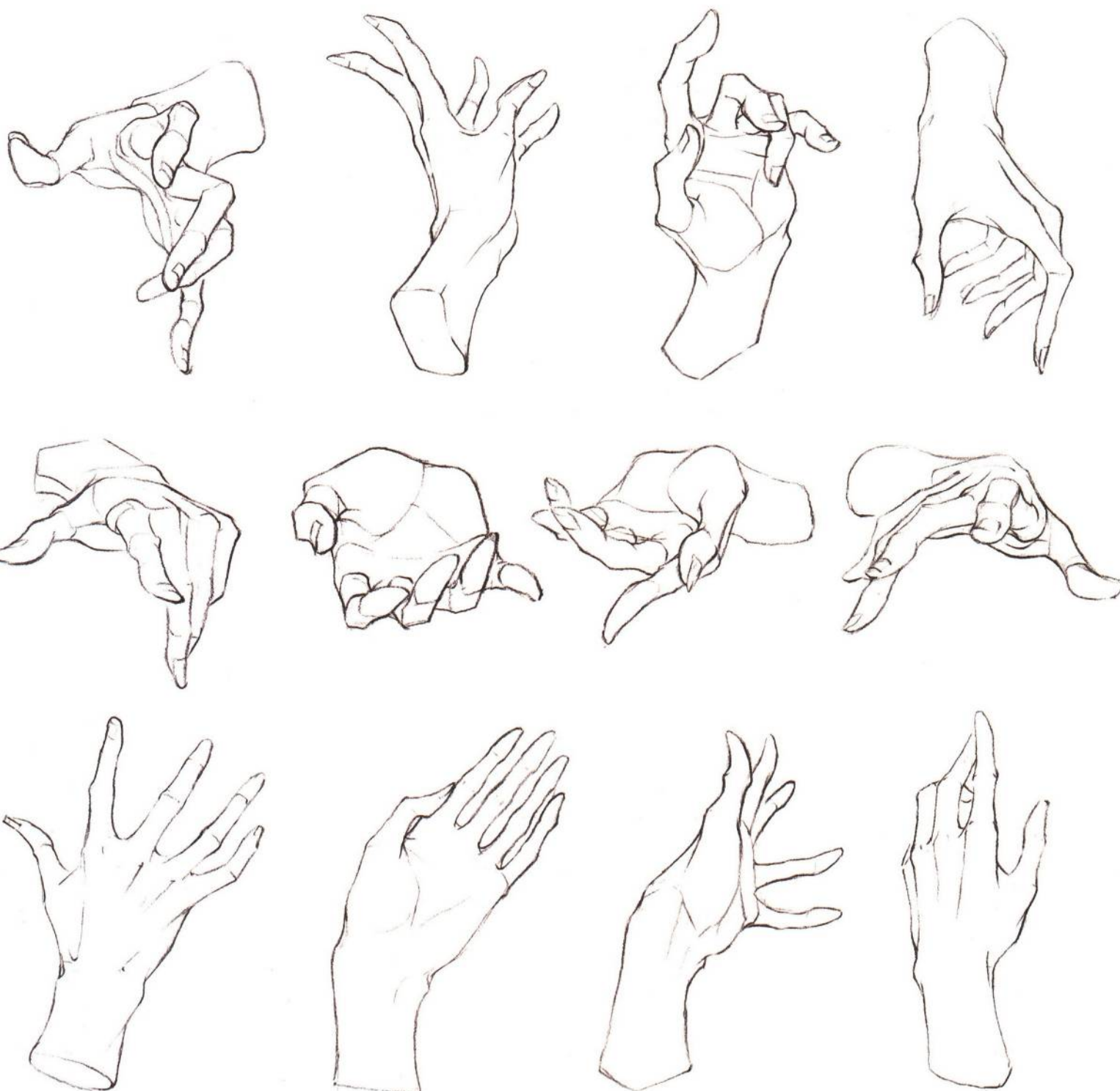
Some finger joints are very beautiful, so we can use different shapes for the joints.

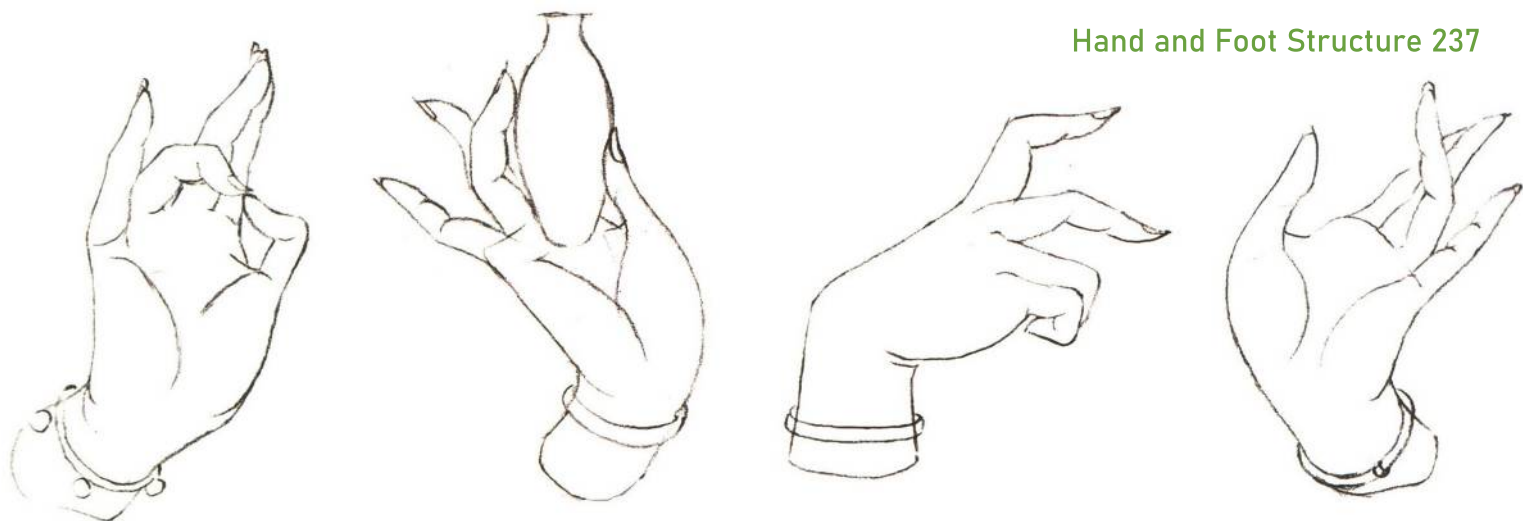
Refine the position and state of each joint, so that we can draw different expressions of the fingers.



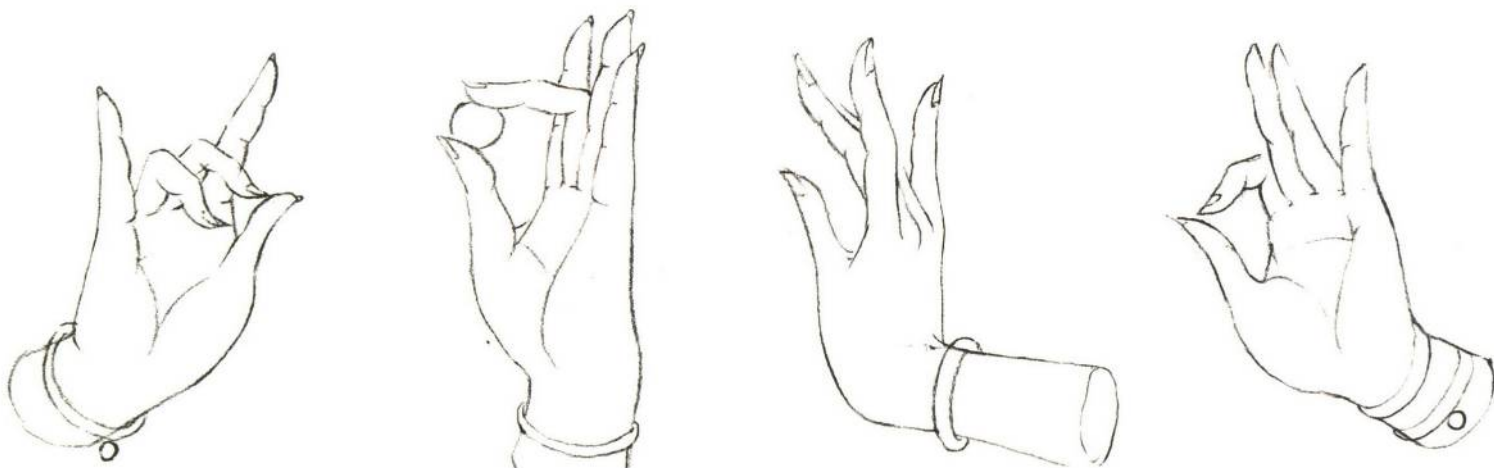
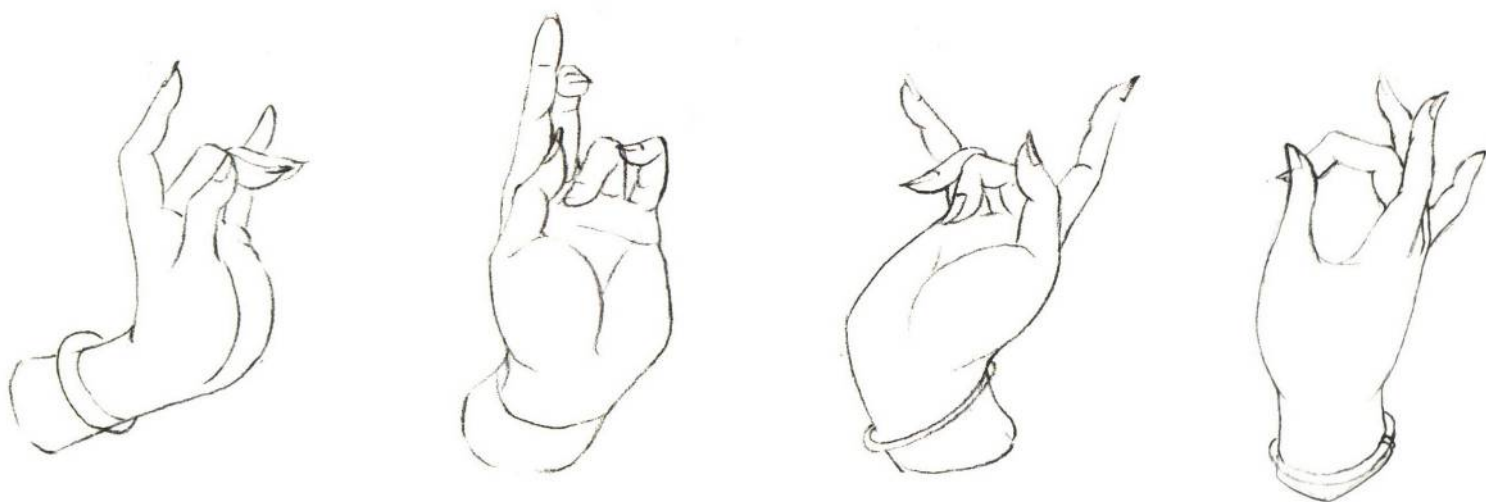
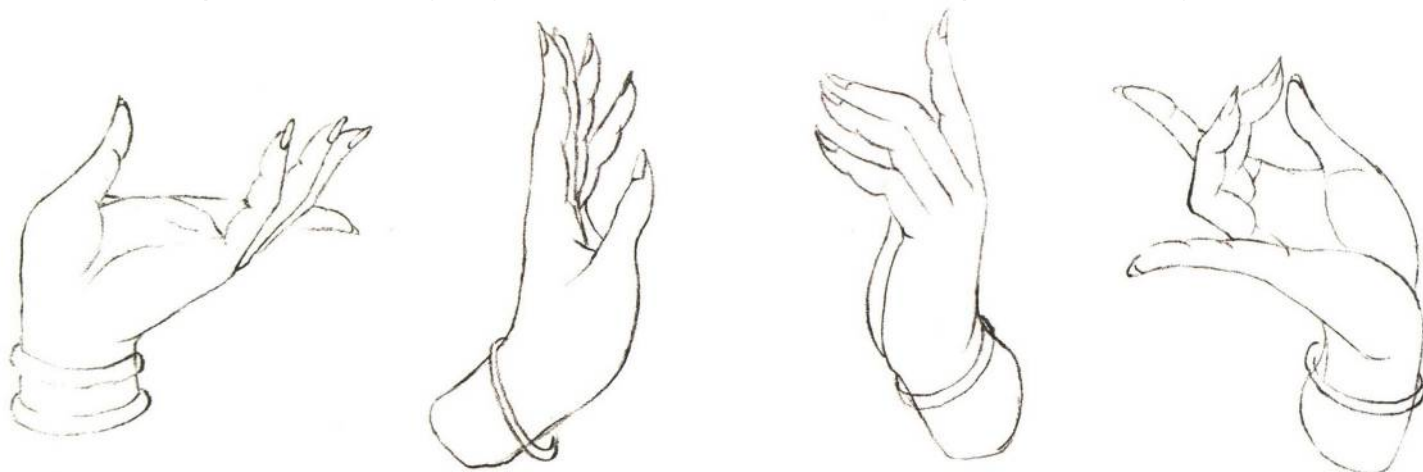


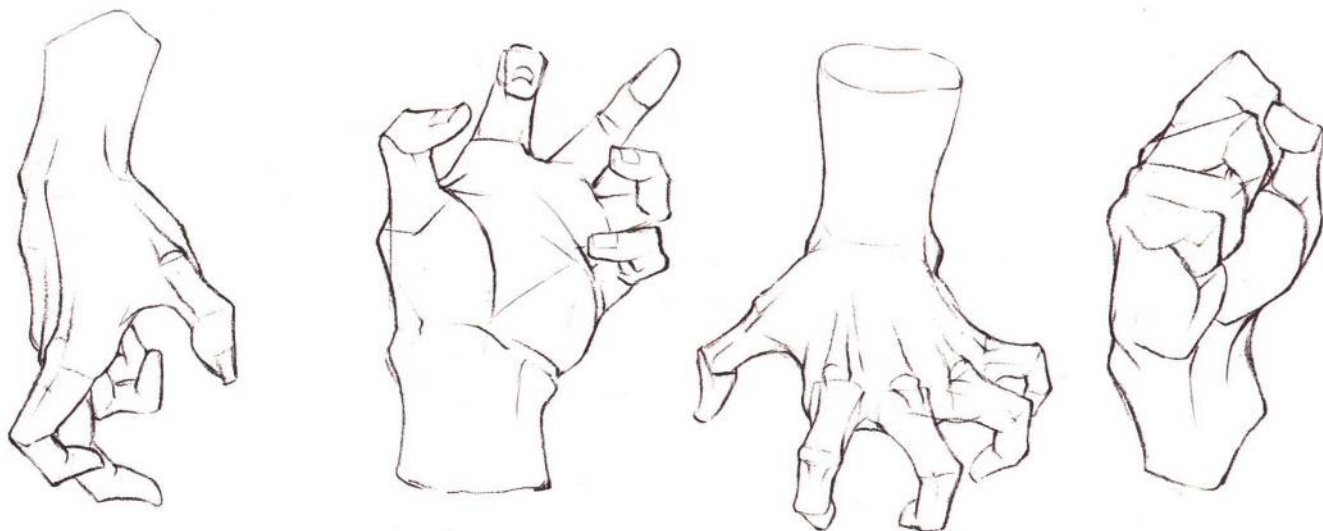
We can draw different fingers with reference to the picture shown here.



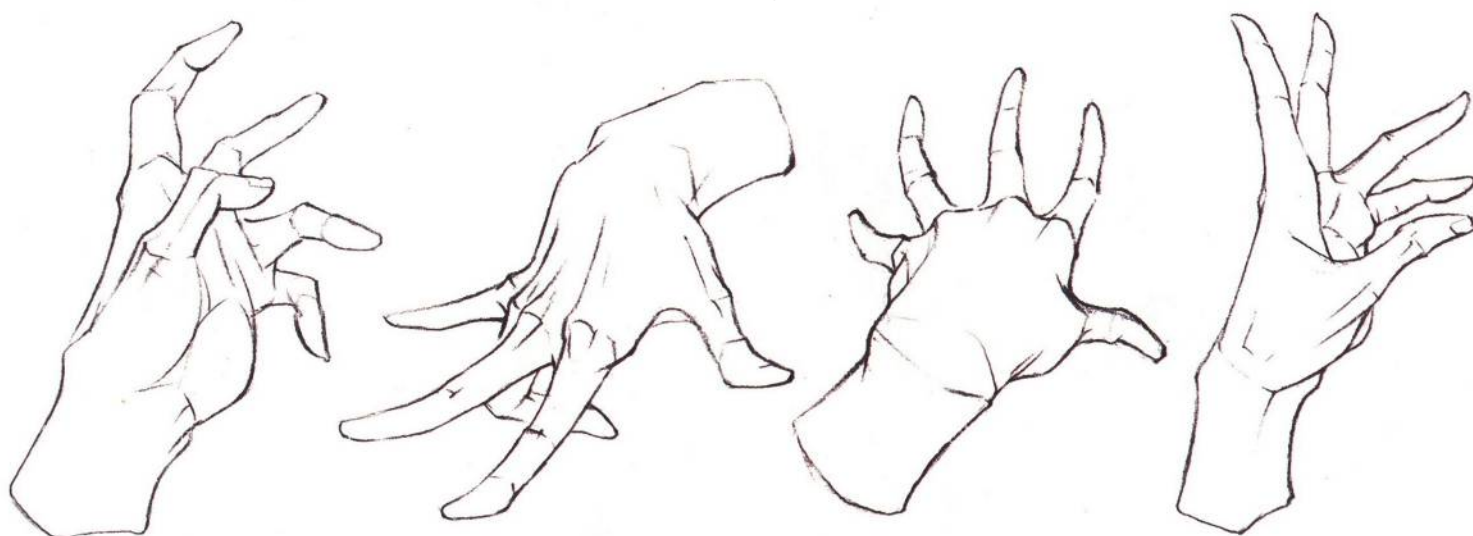


We can also practice drawing fingers with reference to the above partial archaic gesticulations.

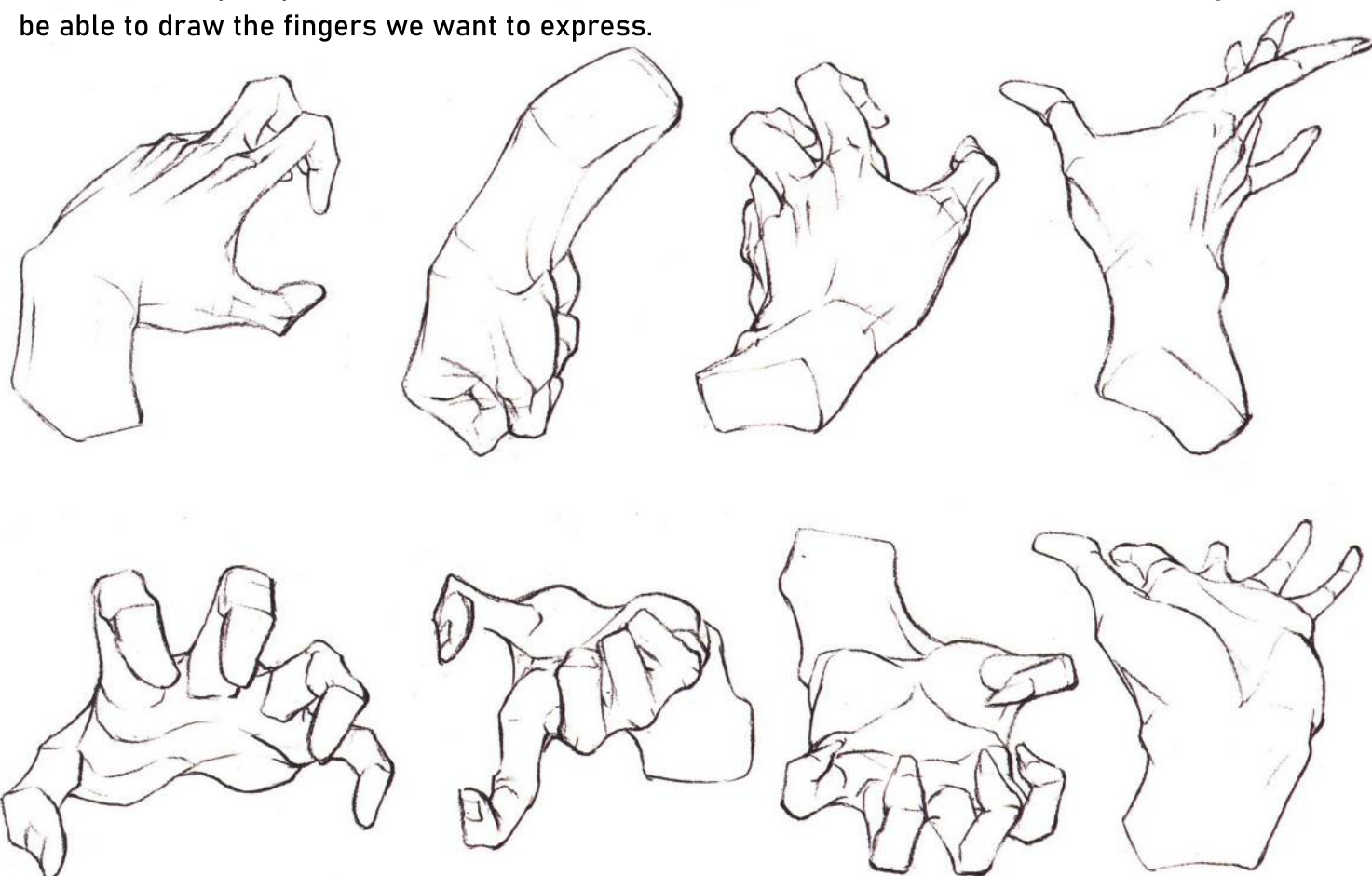




In addition, we can practice drawing strong fingers by referring to the picture.

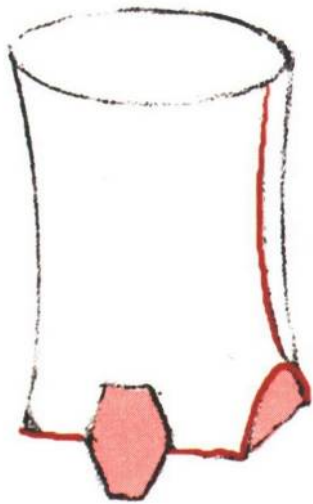


There are many ways to draw hands, and once we have mastered the relevant knowledge, we will be able to draw the fingers we want to express.

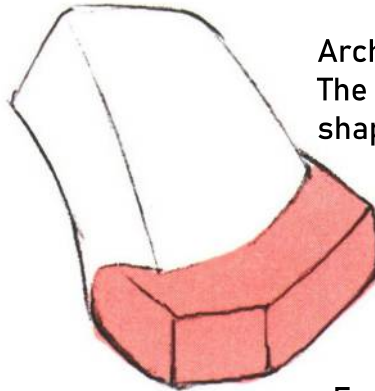


11 Structure of the foot breakdown

We can break down the structure of the foot into five parts: the ankle, the heel, the ball of the foot, the arch of the foot and the toes. The toes are not as flexible as the fingers, so we should focus on understanding the three-dimensional relationship of the foot and drawing the foot in perspective.

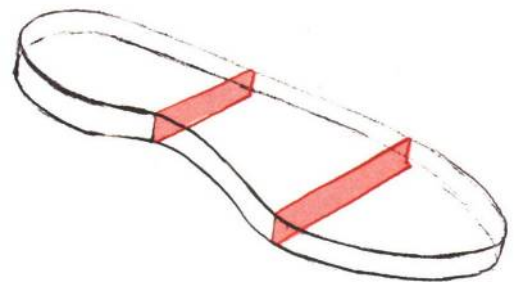


Ankle
The ankle is the joint between the lower leg and the foot.

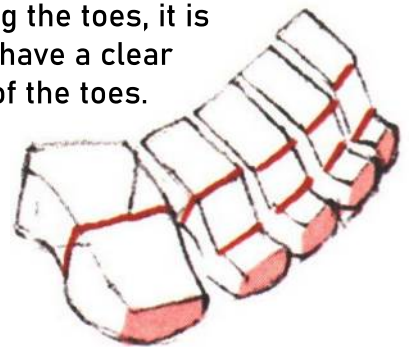


Arch
The arch of the foot is the key shaping area of the foot.

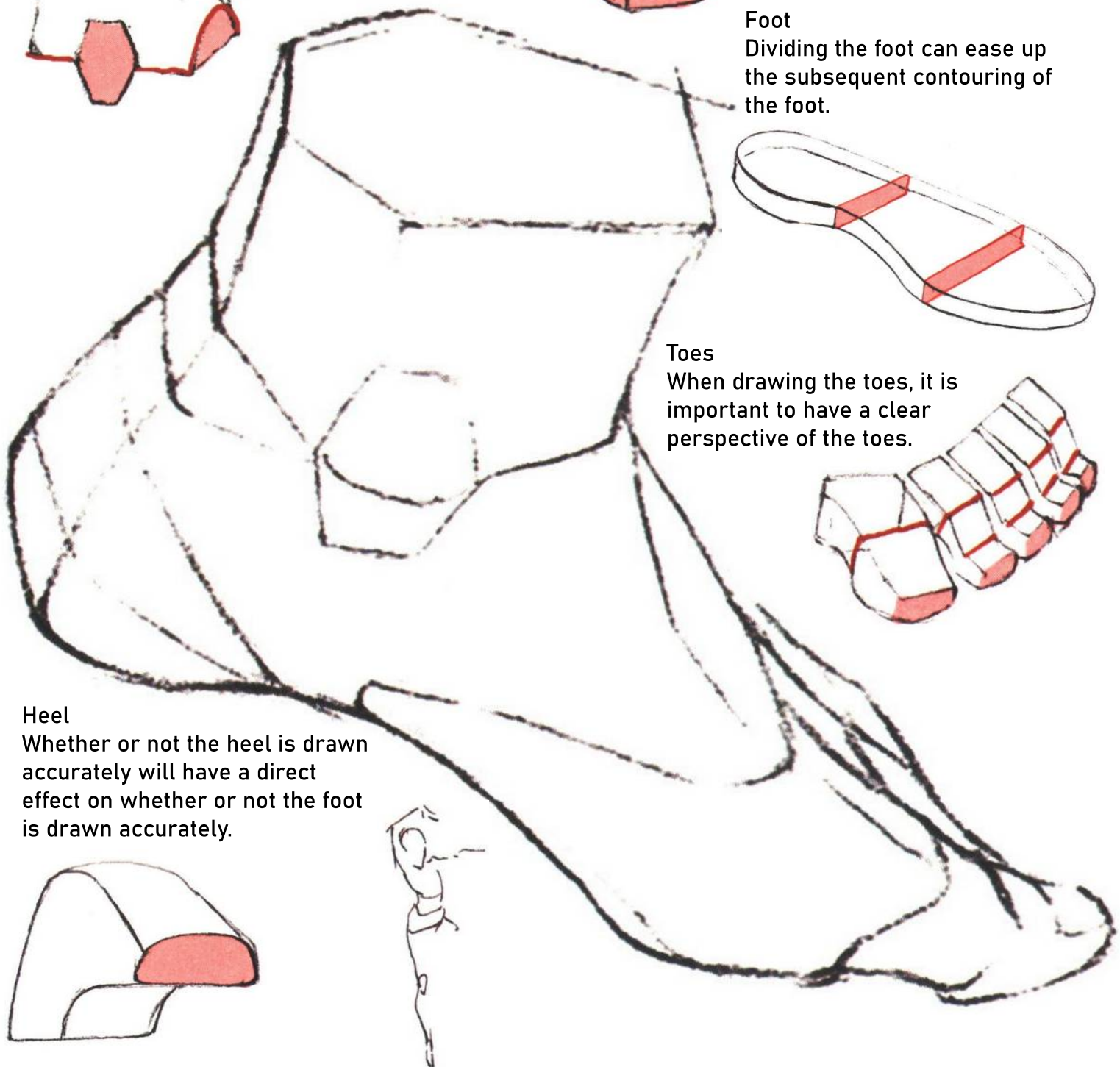
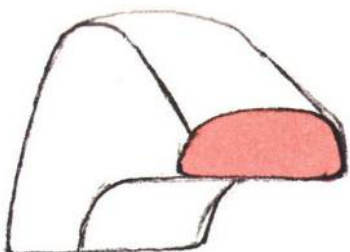
Foot
Dividing the foot can ease up the subsequent contouring of the foot.



Toes
When drawing the toes, it is important to have a clear perspective of the toes.



Heel
Whether or not the heel is drawn accurately will have a direct effect on whether or not the foot is drawn accurately.

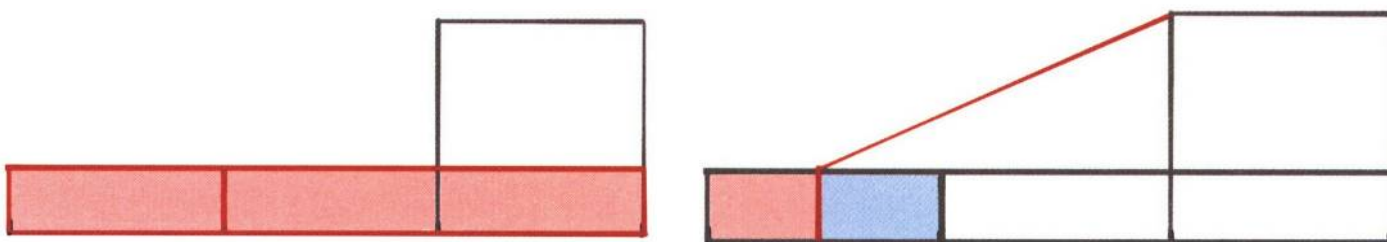


12 The proportions of the foot

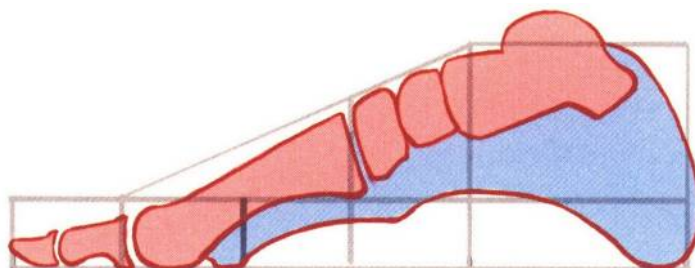
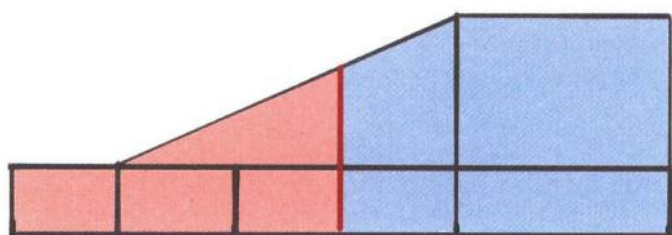
Divide the straight line representing the sole of the foot into three equal parts. Draw a square body at the end.



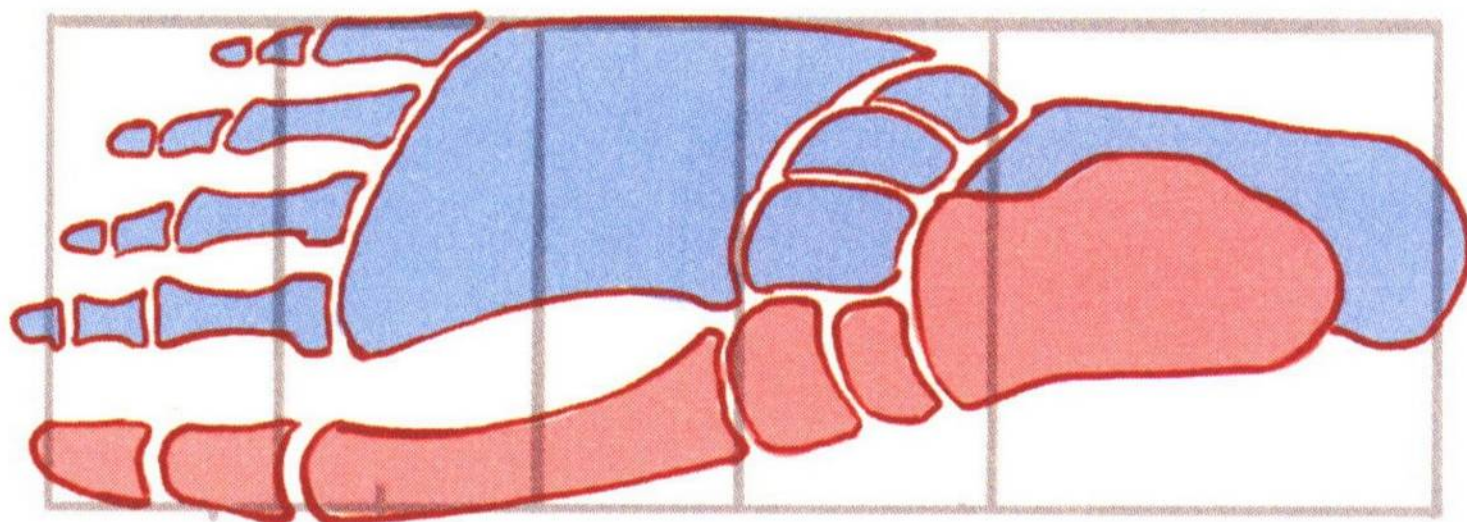
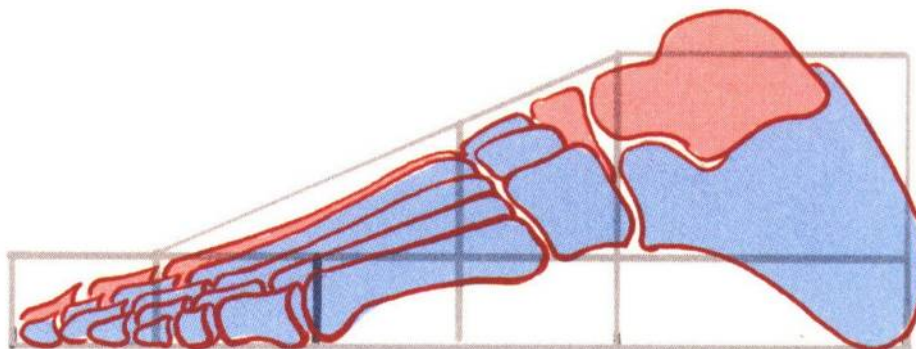
Add the thickness of the sole of the foot to it, by roughly quartering the thickness of the square. Bisect the front end and connect the bisectors to the cube.



Bisect the bottom of the foot and connect the diagonal line above it with the bisecting point, thus drawing the base support for the side of the foot. With this basic support, it will be easier to find the corresponding positions of the bones in the foot.

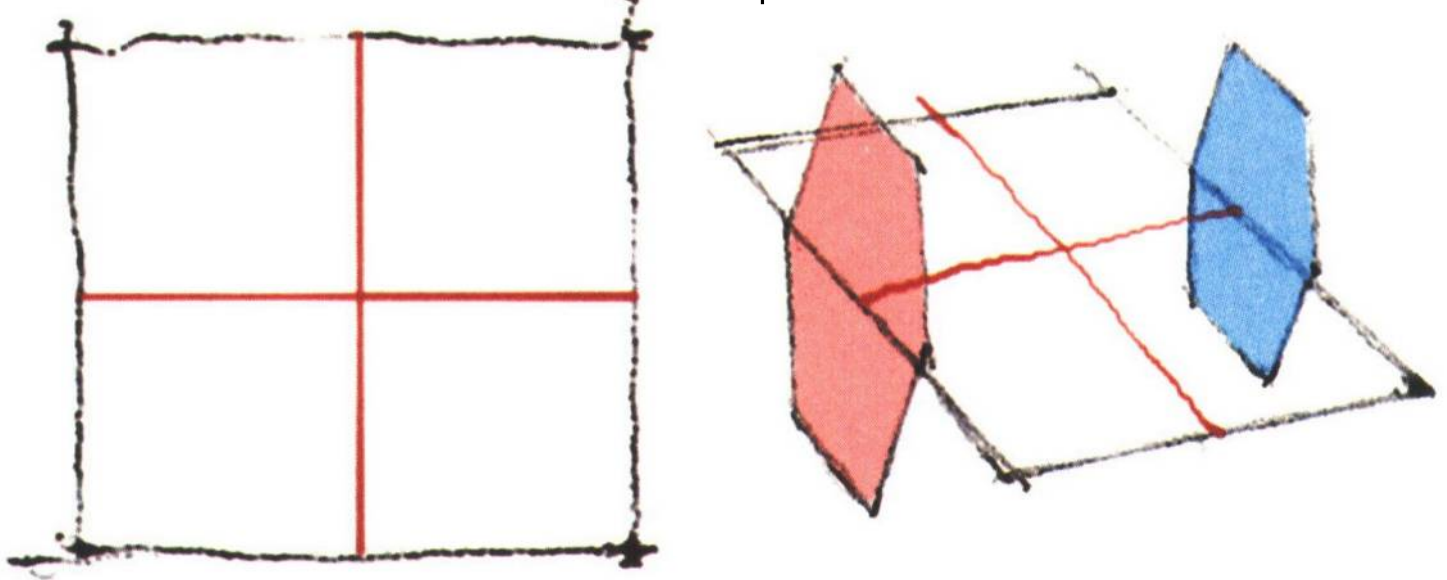


The proportions of the foot are not absolute, but we can get a better idea of the basic shape of the foot by mastering the general proportions.

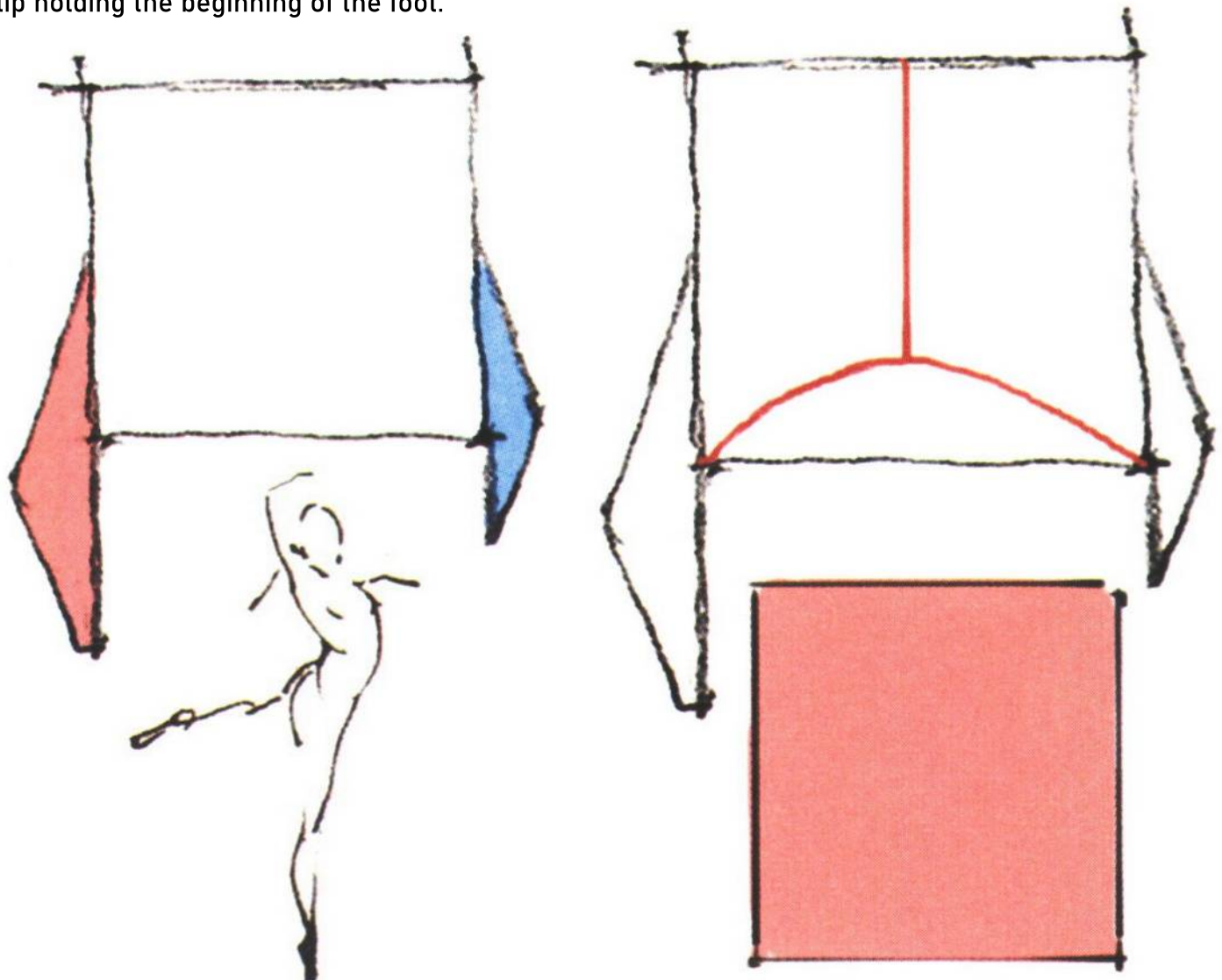


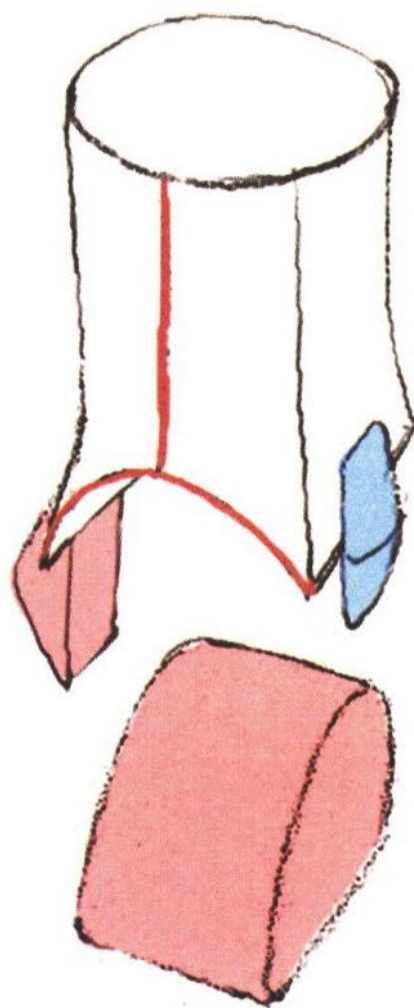
13 Structure of the ankle

The cross section of the ankle can be viewed as a square.



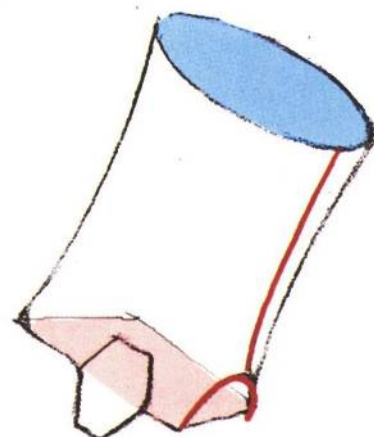
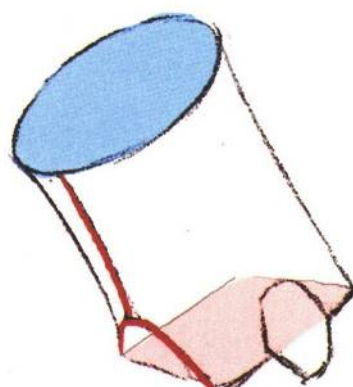
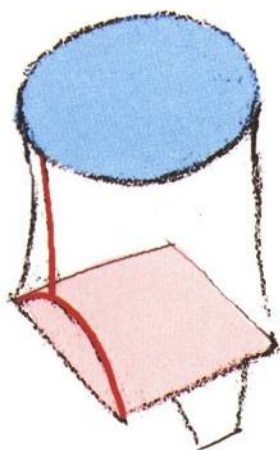
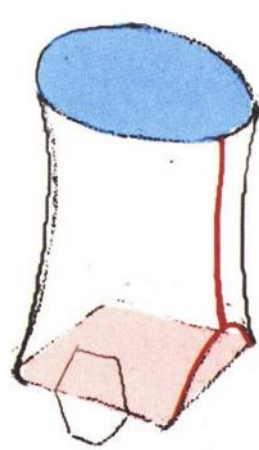
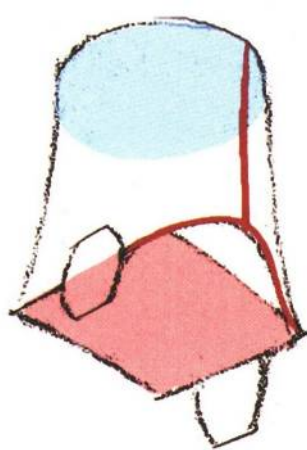
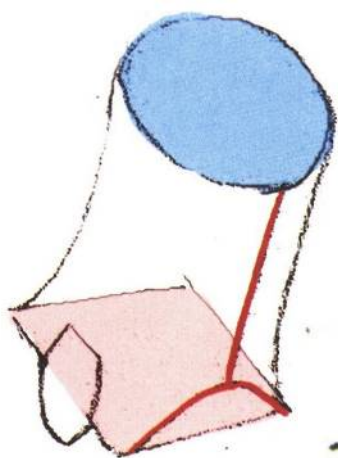
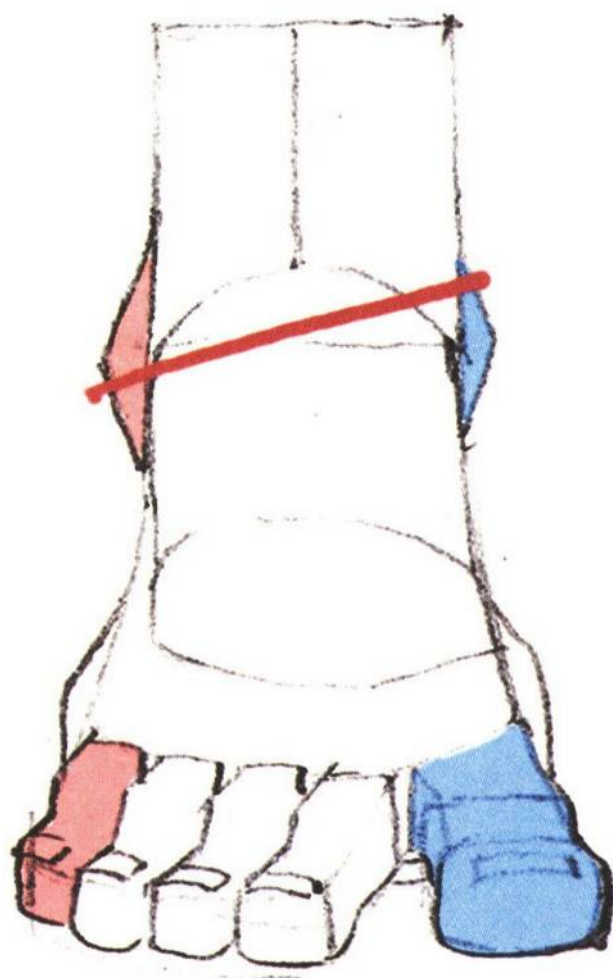
Flatten this square and add two bony protrusions on the left and right sides. When viewed from the front, the lateral bony prominences are higher than the medial bony protrusions. The ankle is like a clip holding the beginning of the foot.





Looking at it from a different angle makes it easier for us to understand the three-dimensional relationship between the two. Whether we draw the ankle accurately or not determines whether we can draw the structure of the foot well.

In order to better draw the structure of the foot, we can use the following structural relationship diagram to practice drawing the perspective of the ankle from various angles.

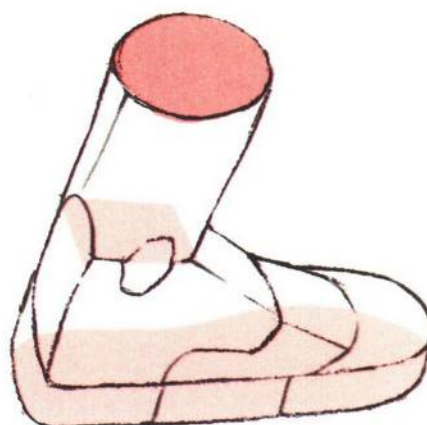
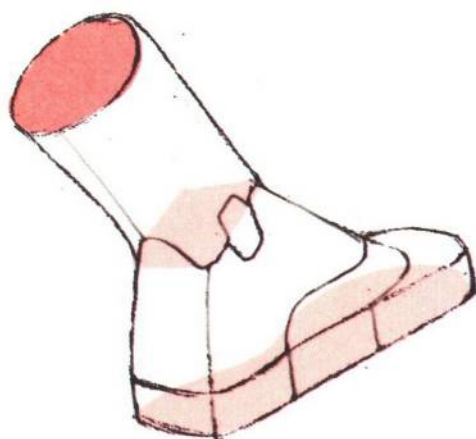
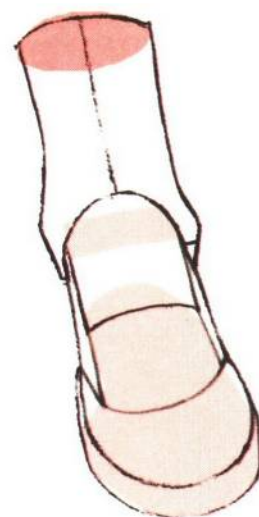
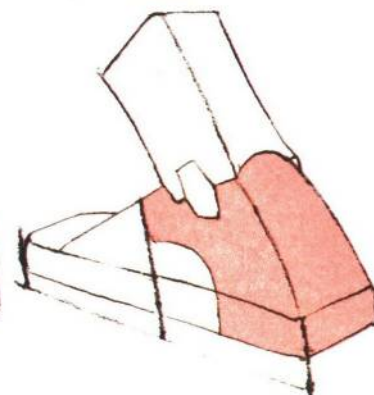
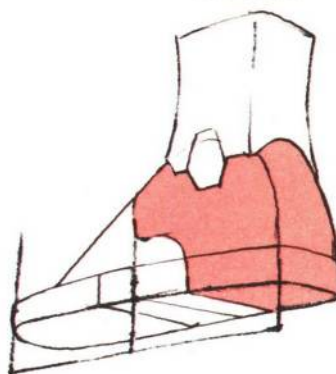
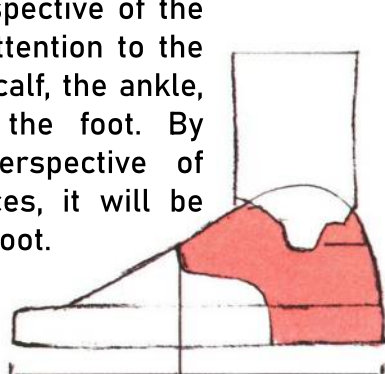
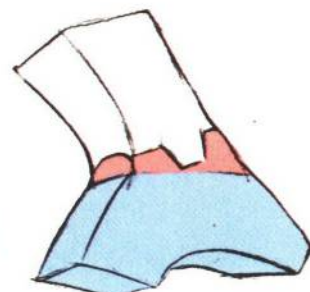
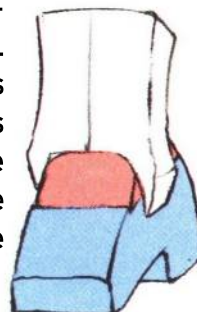
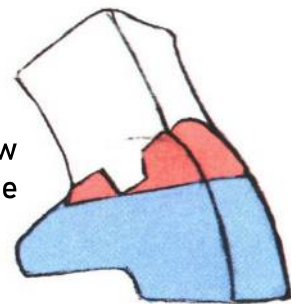


14 Structural points of the foot

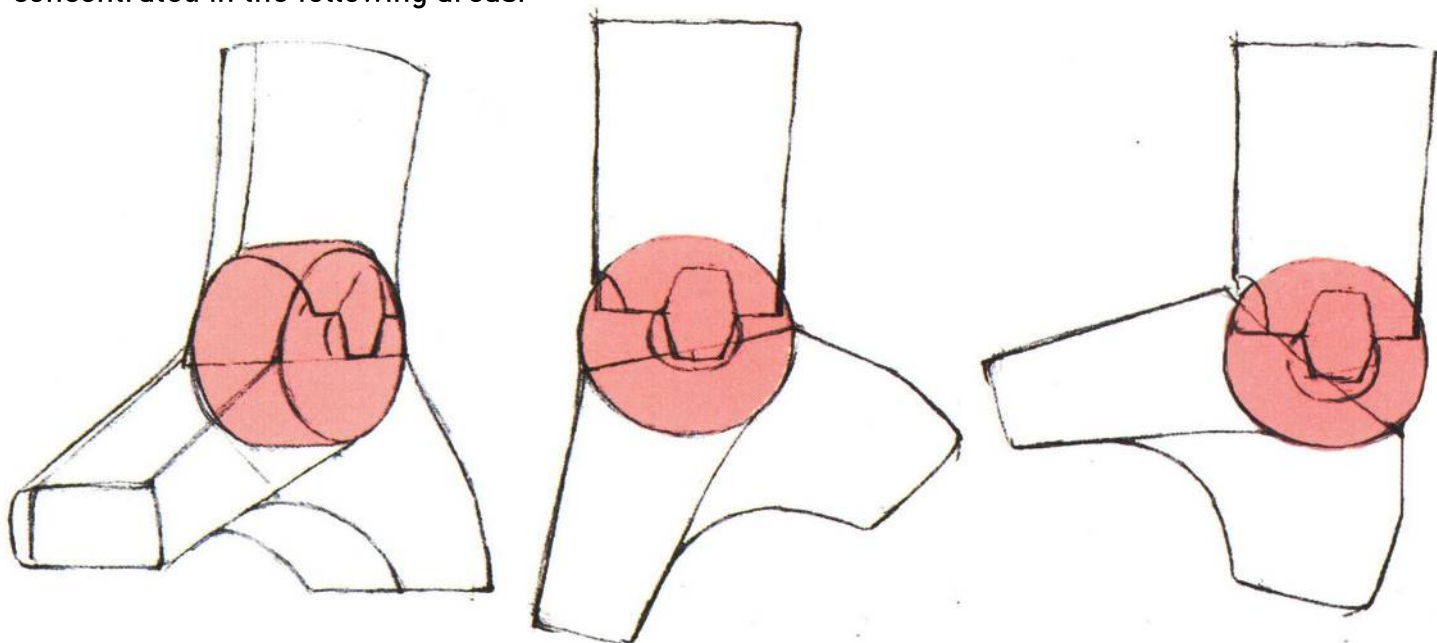
Once we have a three-dimensional understanding of the ankle, we can draw the heel, paying attention to the three-dimensional relationship between the heel and the foot.

Once we have a three-dimensional understanding of the ankle, we can draw the heel, paying attention to the three-dimensional relationship between the heel and the foot. When viewed from the side, the proportionality of the heel is roughly as shown in the picture: the length of the heel is roughly one-half of the length of the entire surface of the foot. Using this proportionality, it is easier to control the perspective of the foot by mastering the perspective of the heel from all angles.

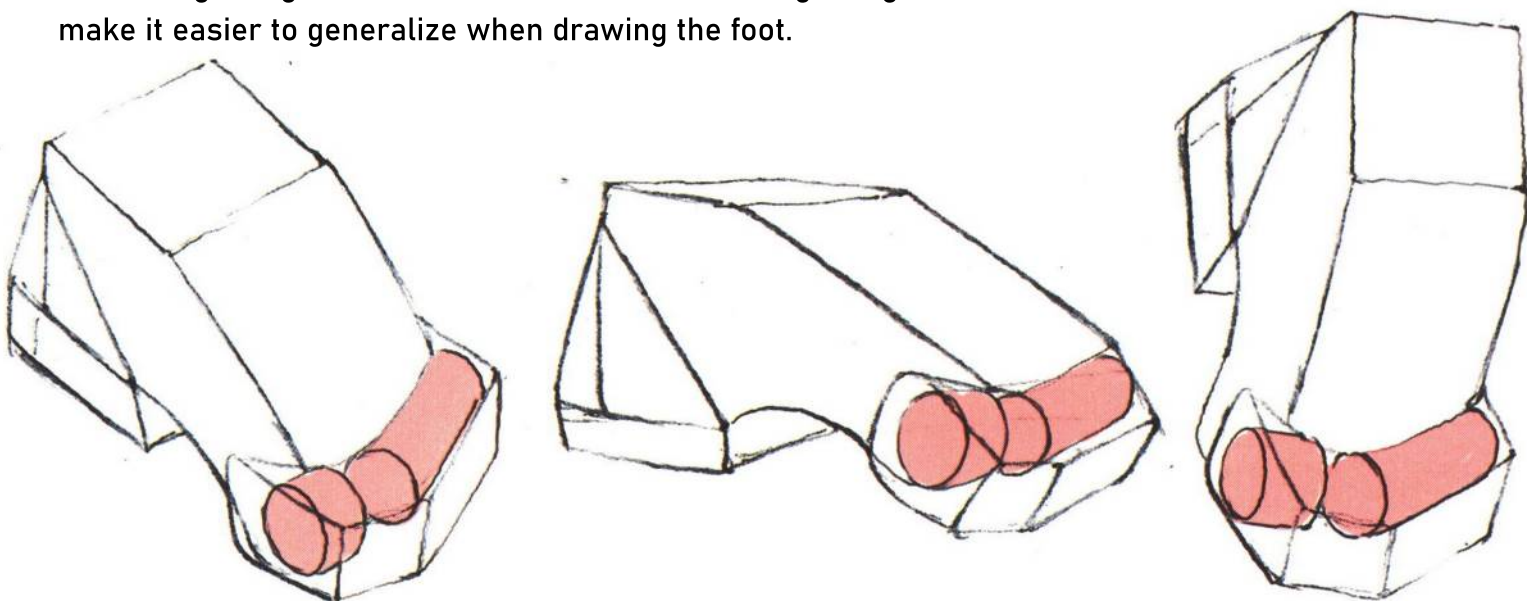
To control the perspective of the foot, we can pay attention to the perspective of the calf, the ankle, and the sole of the foot. By expressing the perspective of these three surfaces, it will be easier to draw the foot.



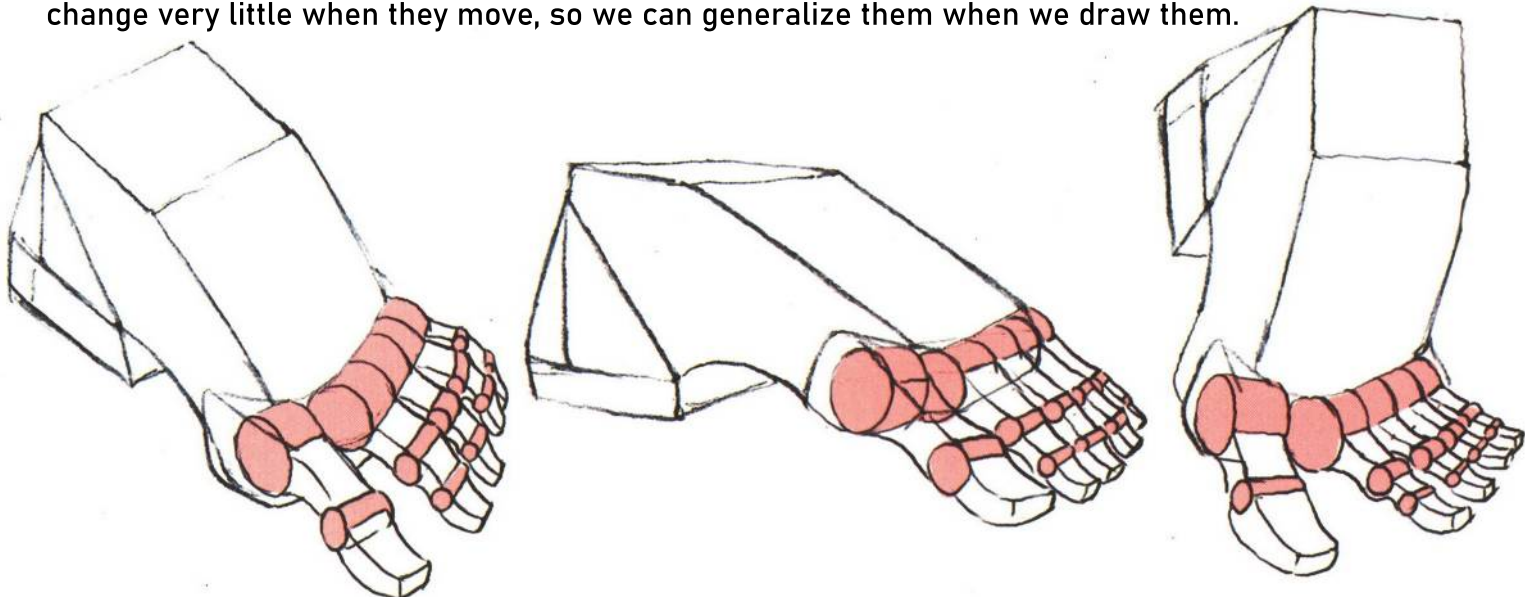
When you are moving around, there are not many joints that move on the feet, but they are mainly concentrated in the following areas.



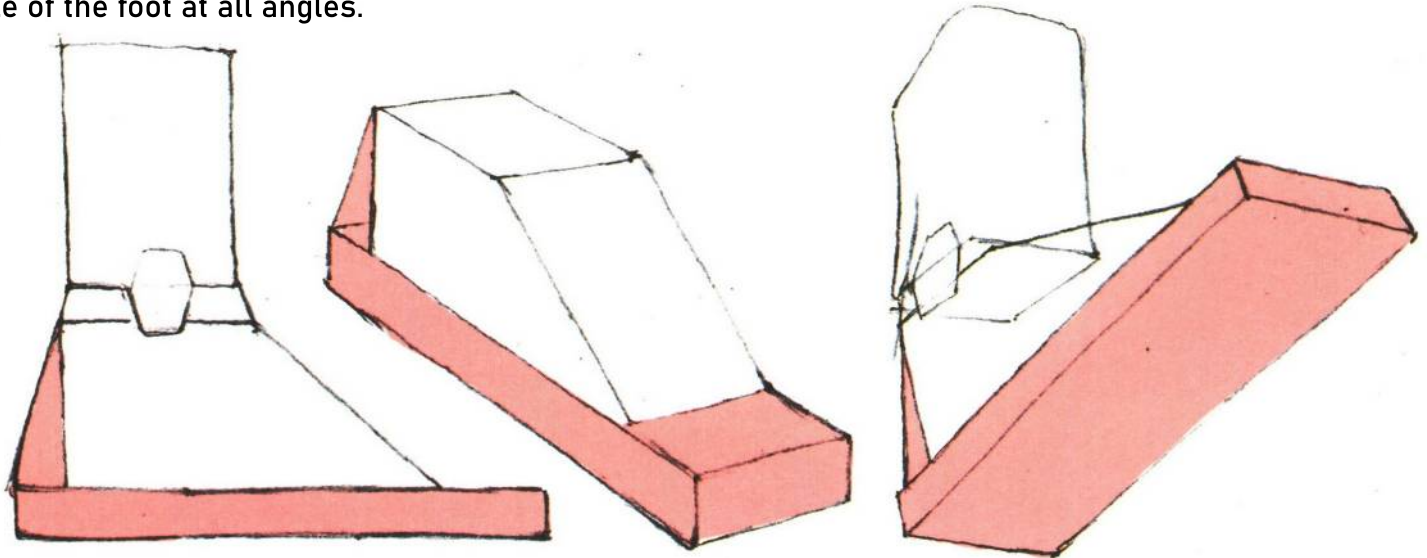
Ankle. Think of the joints in the ankle as cylindrical gears, which are used to move the foot. At the beginning of the toes. We can divide the beginning of the thumb and the other four toes to make it easier to generalize when drawing the foot.



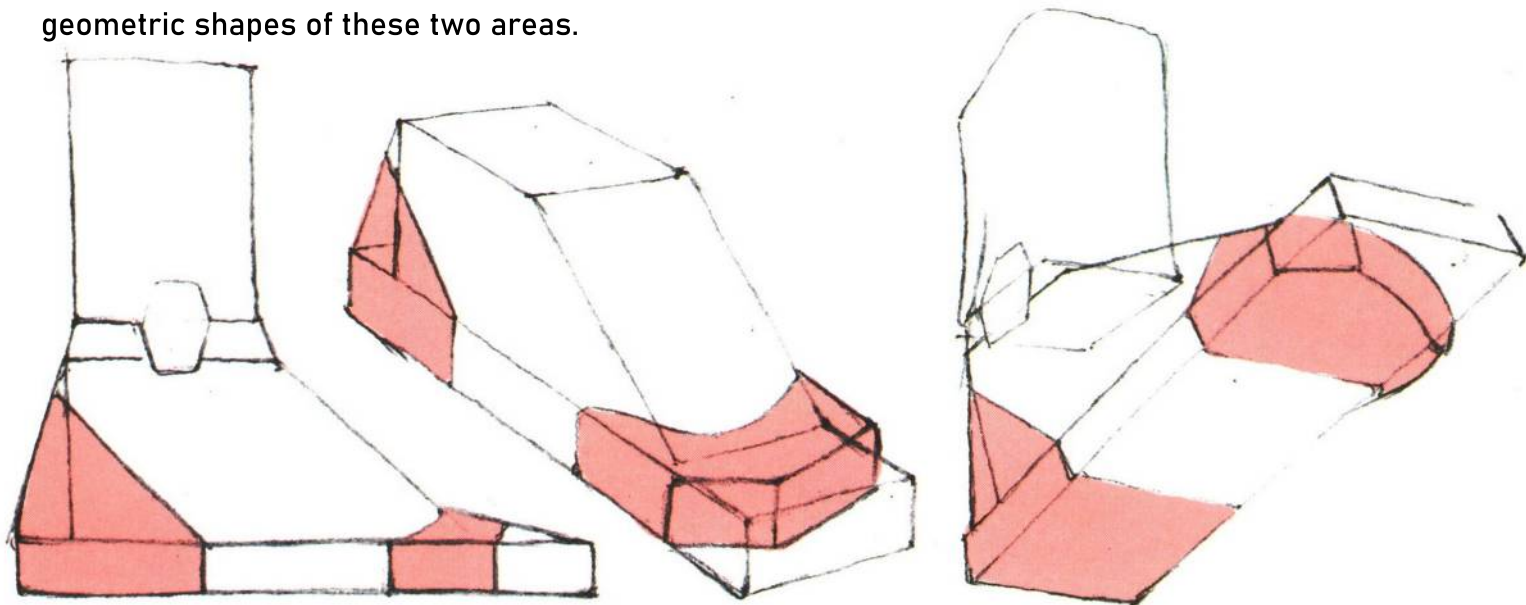
Toes. The big toe has only two joints, while the other four toes have three joints, but these four toes change very little when they move, so we can generalize them when we draw them.



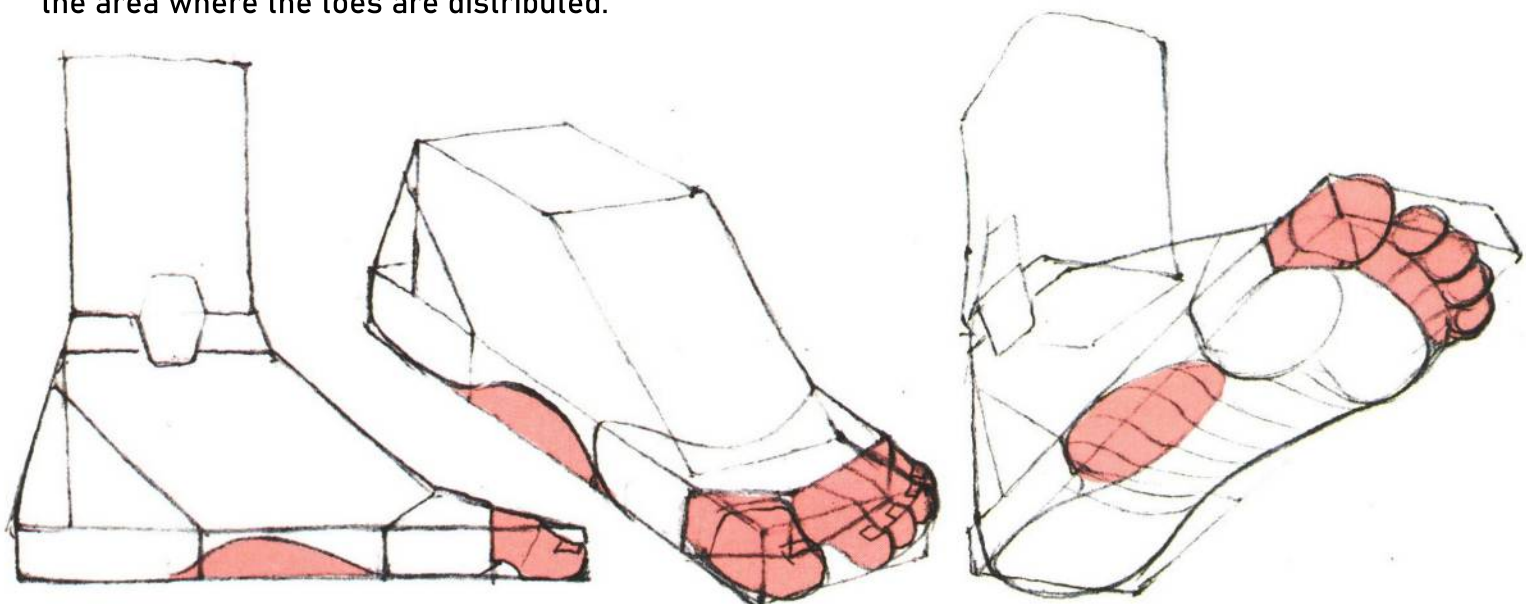
Once we have a certain knowledge of the joints of the foot, we can try to make a simple geometrical treatment of the foot, first of all, we can grasp the perspective of the rectangle representing the sole of the foot at all angles.



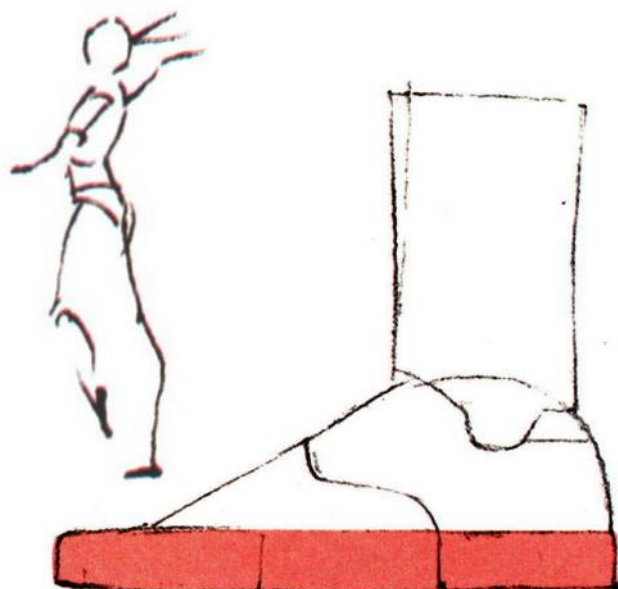
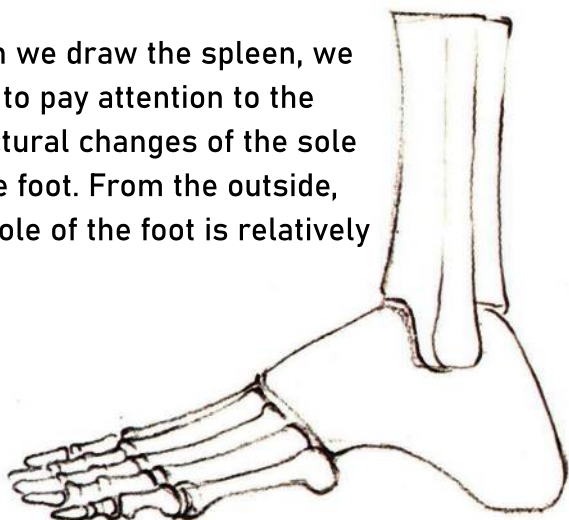
On the basis of the above geometry, find the starting point of the heel and the toes, and make simple geometric shapes of these two areas.



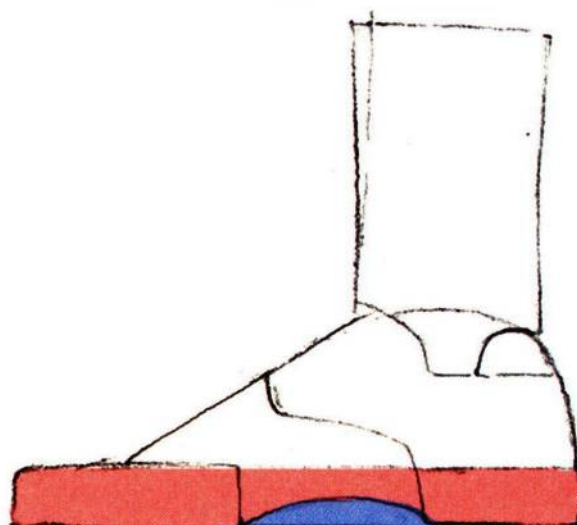
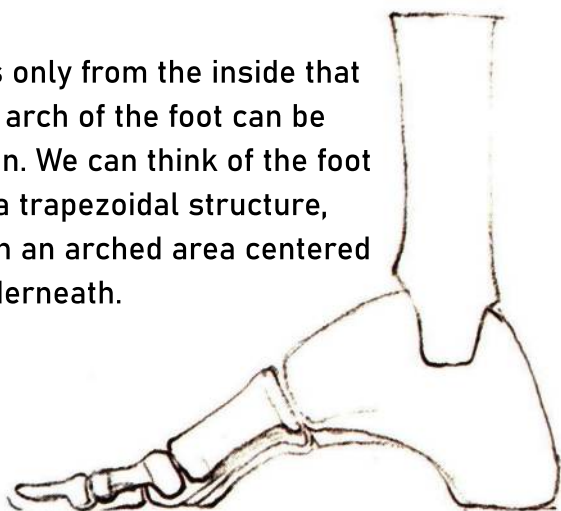
Finally, you can draw the basic shape of the foot quickly by finding the depression of the arch and the area where the toes are distributed.



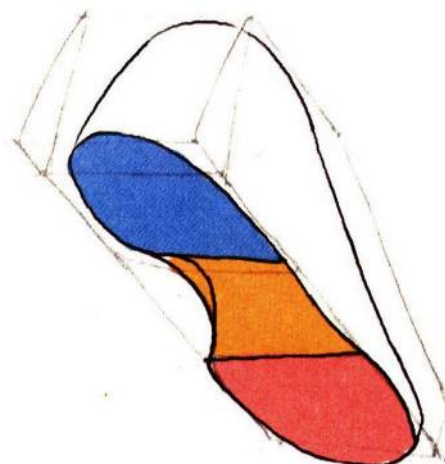
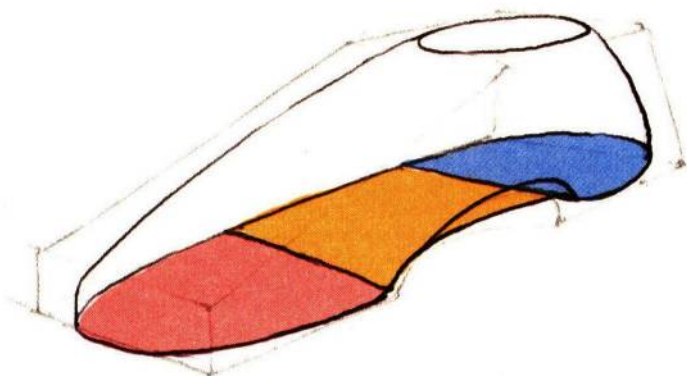
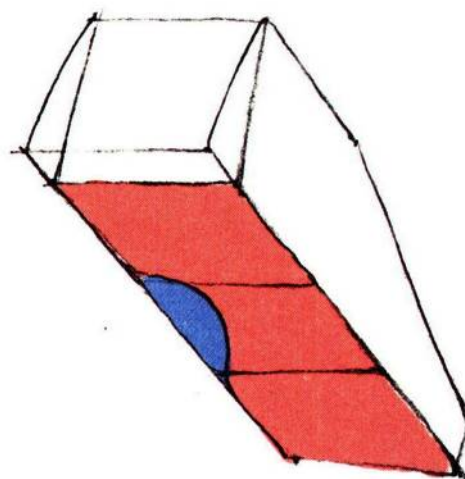
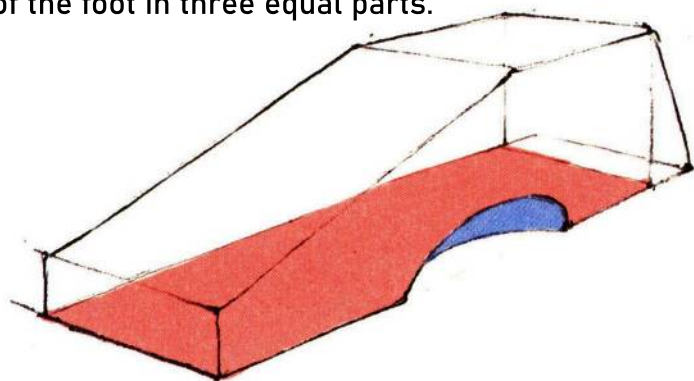
When we draw the spleen, we have to pay attention to the structural changes of the sole of the foot. From the outside, the sole of the foot is relatively flat.



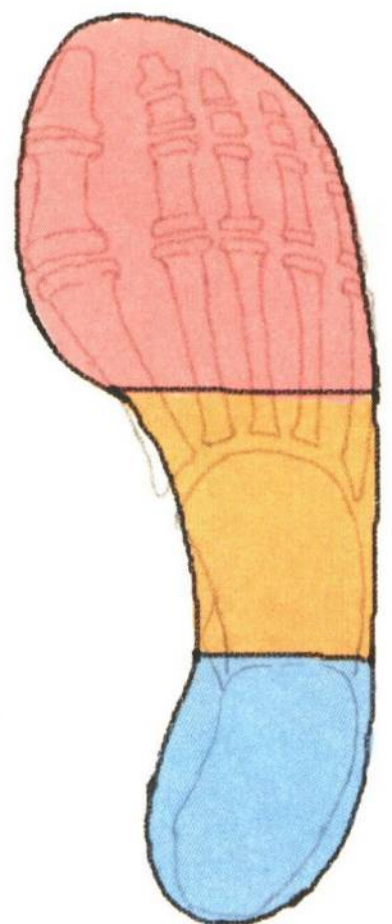
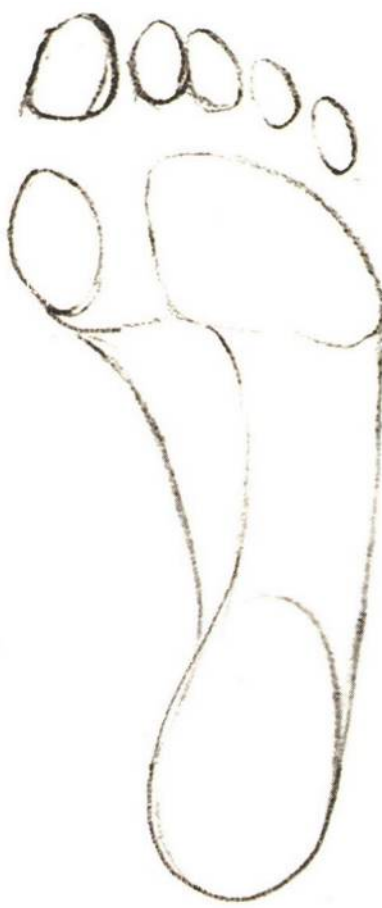
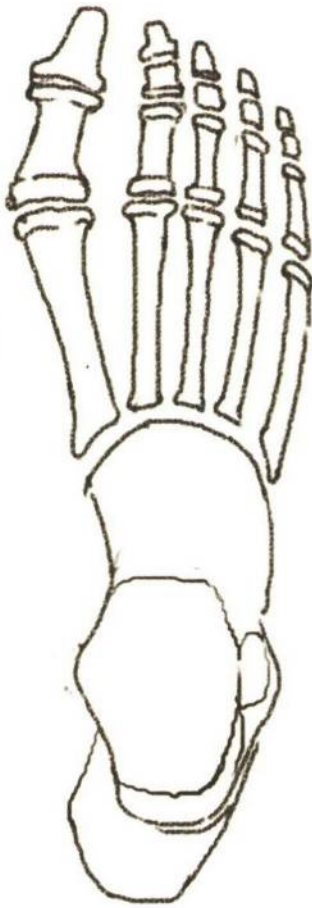
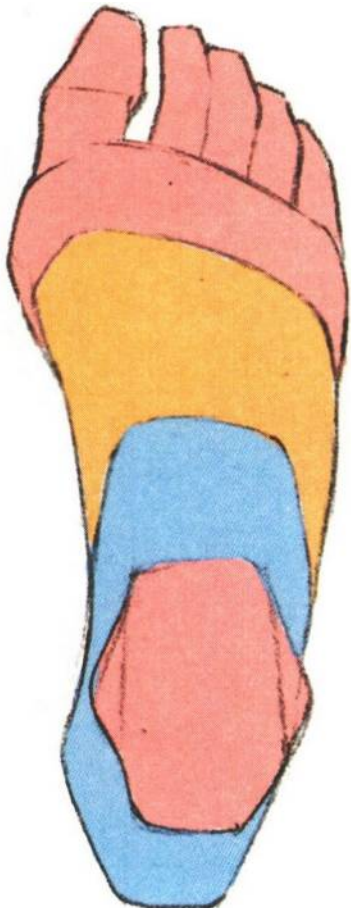
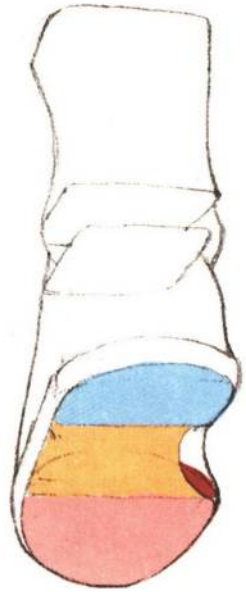
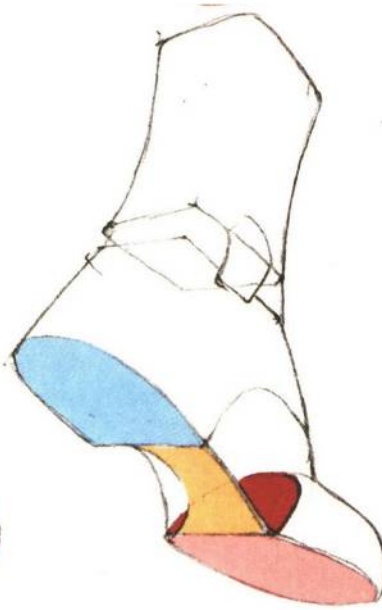
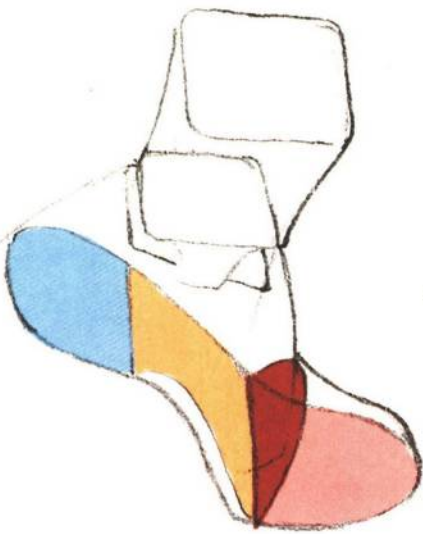
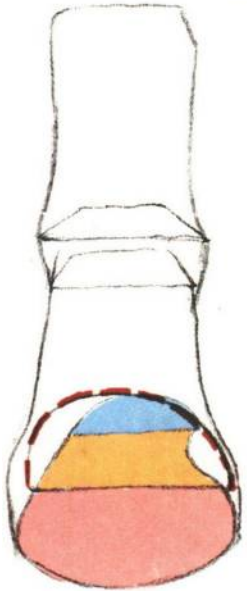
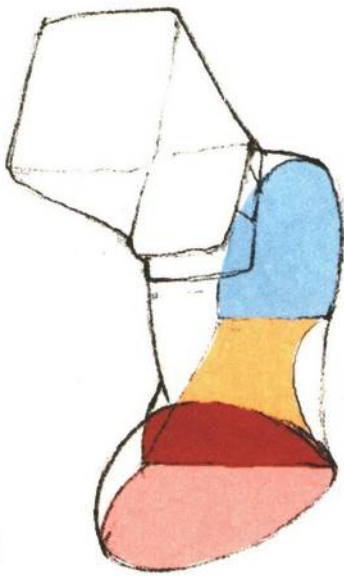
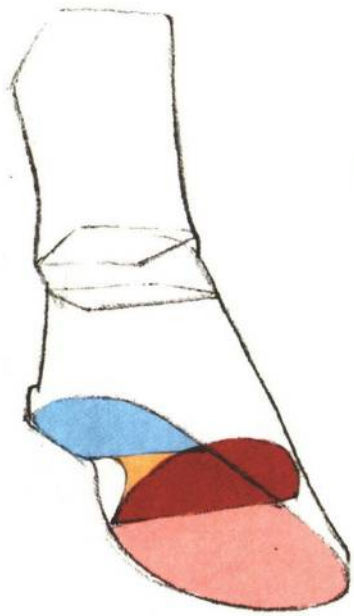
It is only from the inside that the arch of the foot can be seen. We can think of the foot as a trapezoidal structure, with an arched area centered underneath.



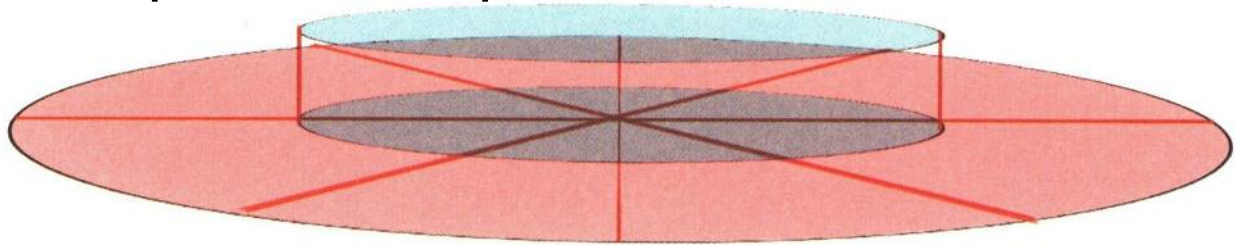
To better represent this area, we can simply divide the sole of the foot in three equal parts.



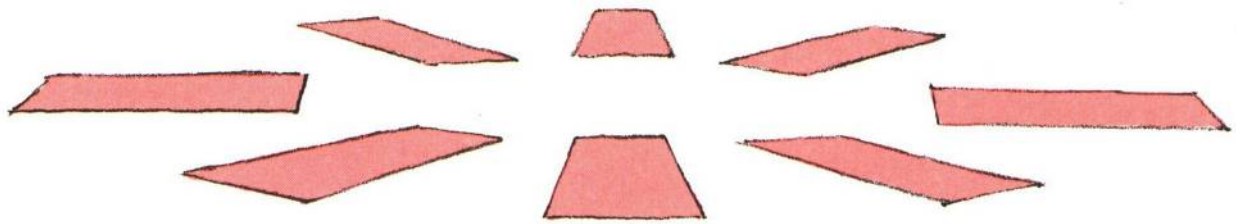
By dividing the sole of the foot into three equal parts, we can simplify the structure of the foot, and based on this, we can draw the arch of the foot, which will help us to draw the movement of the foot in a better way.



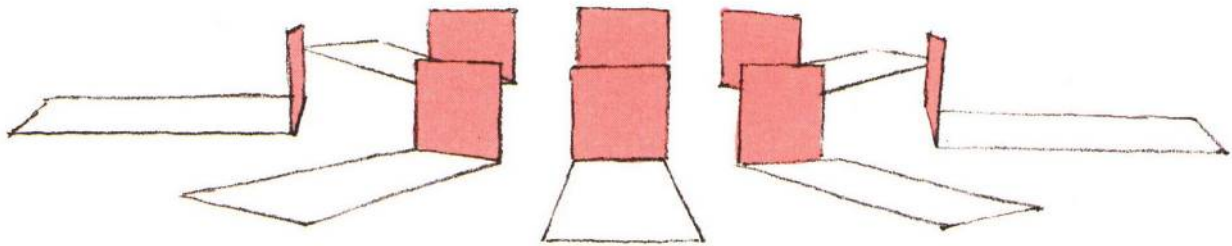
15 The Spatial Relationship between the Foot and the Ground



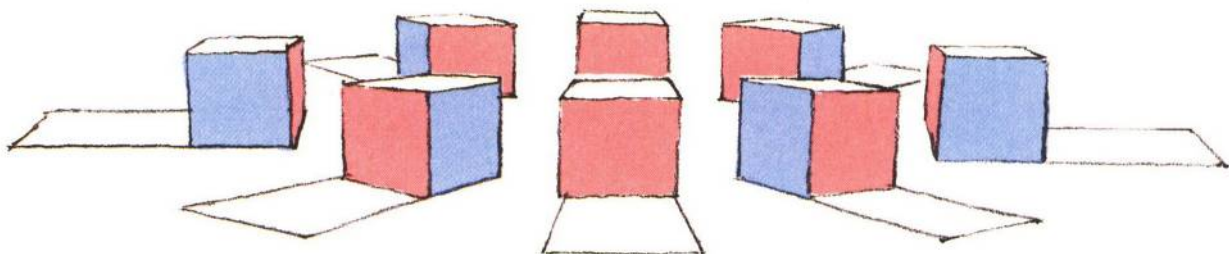
The spatial relationship between the foot and the ground can be simply understood as a geometric perspective relationship as shown in the figure on the left. Draw a circle and a cylinder in the center of the circle.



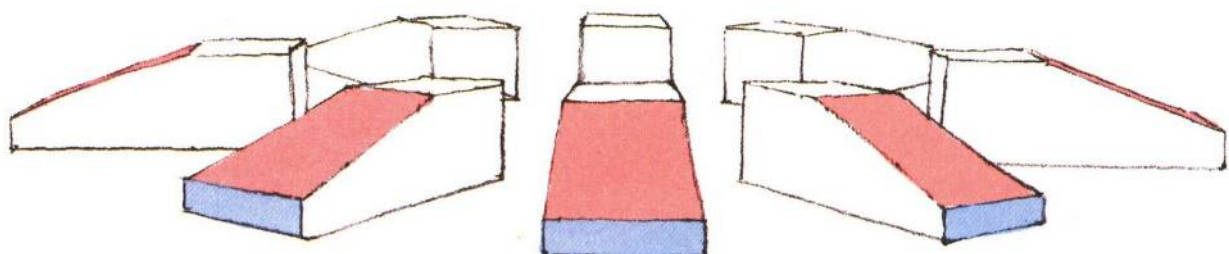
Find the perspective of the soles of the feet in different directions, and draw the perspective surfaces.



Shape the height of the heel on the perspective plane. Based on the height of the heel, add thickness.

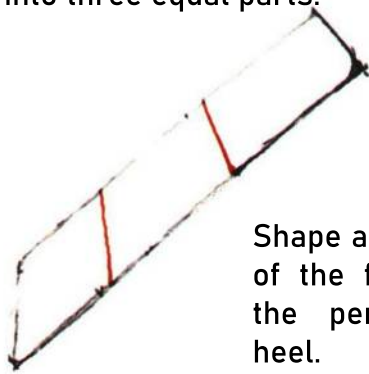


Finally, add the slope of the instep and draw the thickness of the toes to create a trapezoidal structure with different orientations.

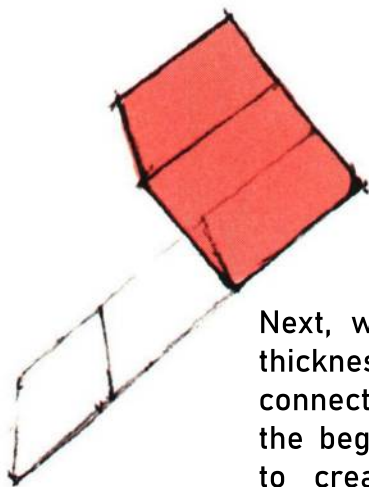
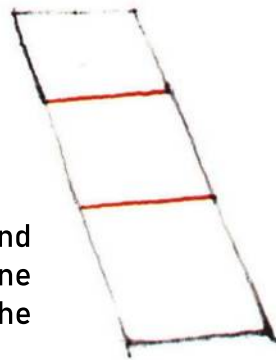


16 Steps for drawing feet

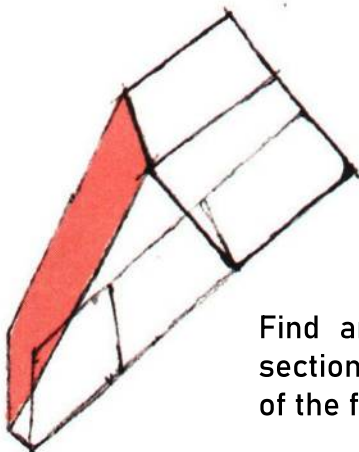
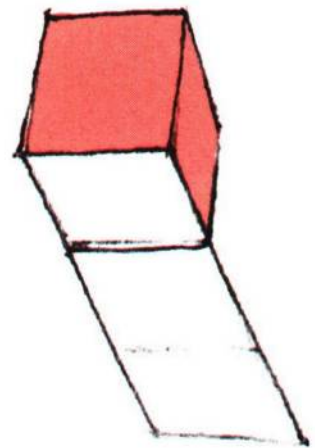
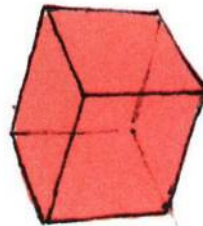
To connect the lessons learned, we first define the perspective of the sole of the foot and divide it into three equal parts.



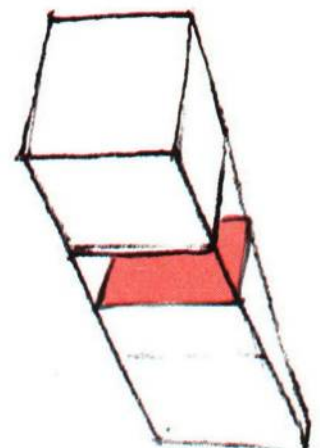
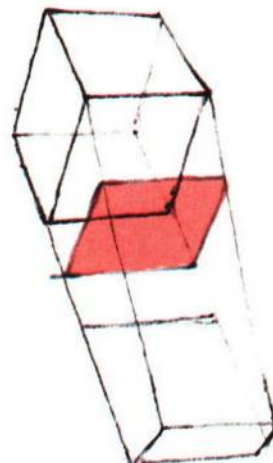
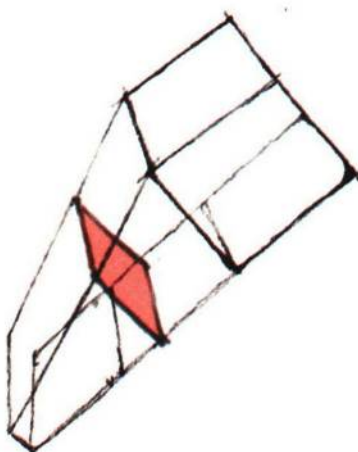
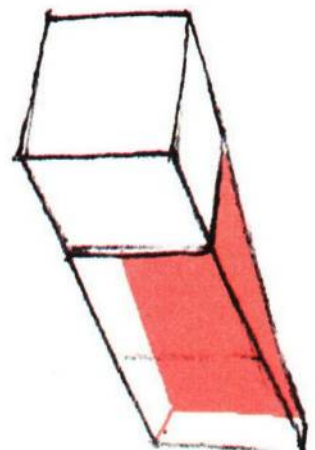
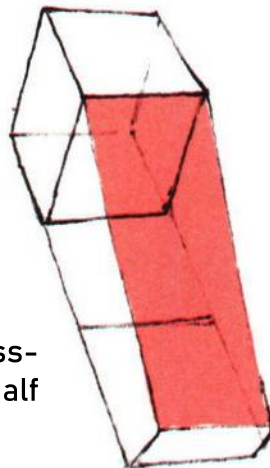
Shape a square at the end of the foot to determine the perspective of the heel.



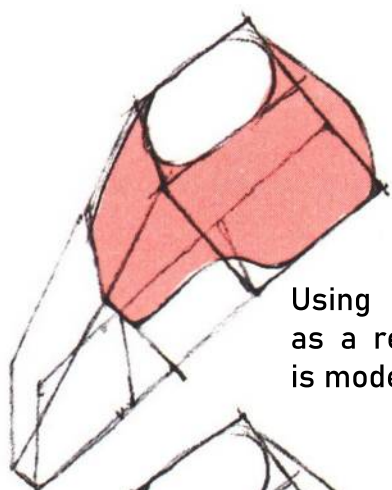
Next, we will create the thickness of the toes and connect the upper end to the beginning of the heel to create a trapezoidal structure.



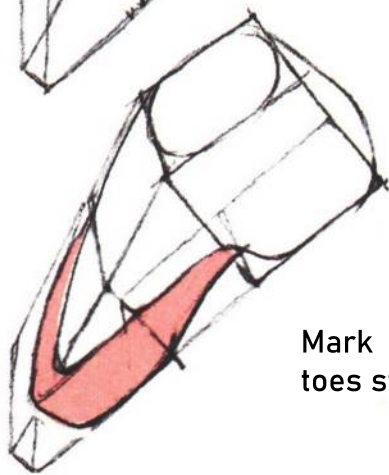
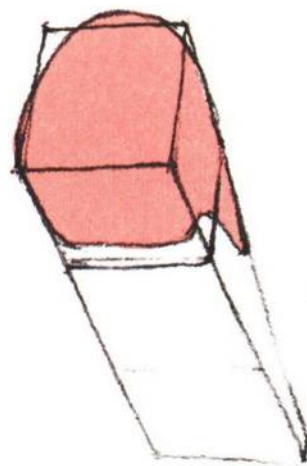
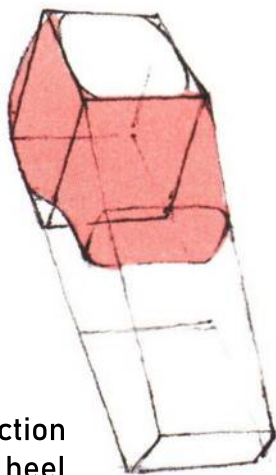
Find and mark a cross-section on the bottom half of the foot.



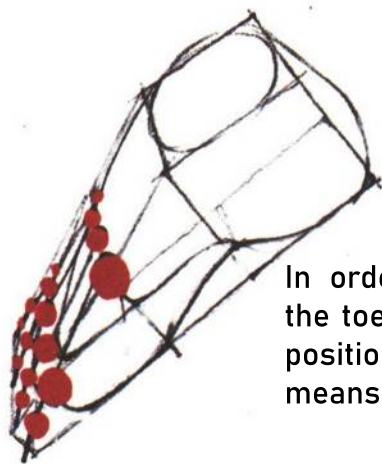
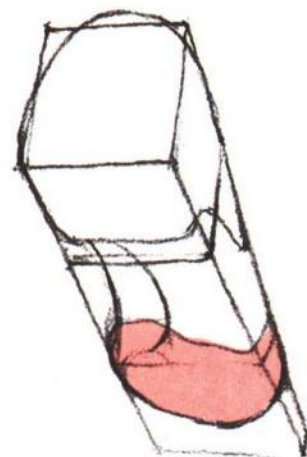
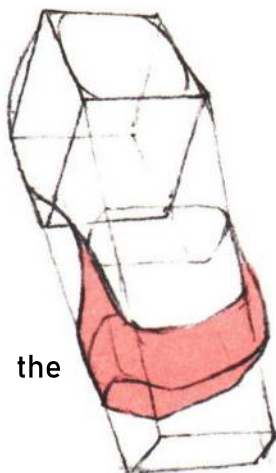
17 Foot Drawing Points



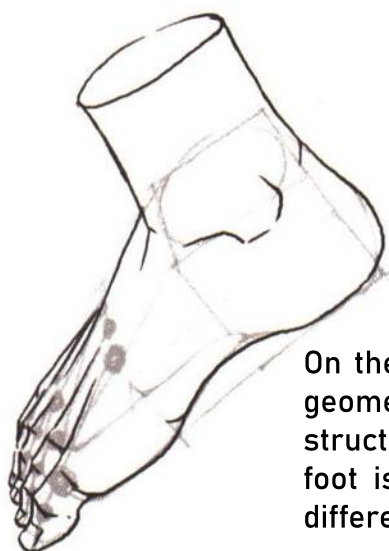
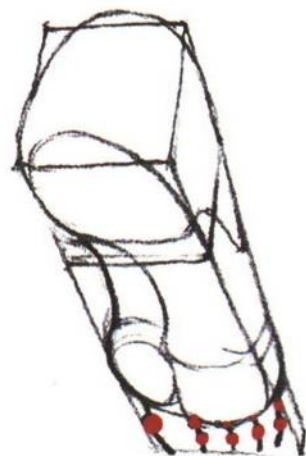
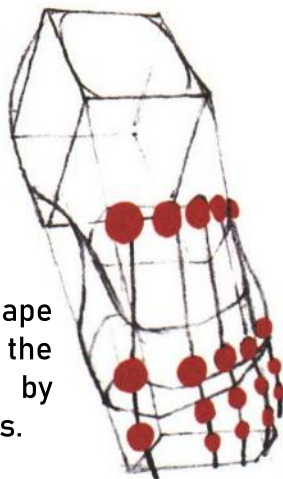
Using the cross-section as a reference, the heel is modeled in detail.



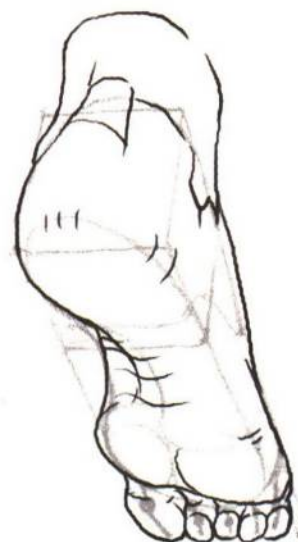
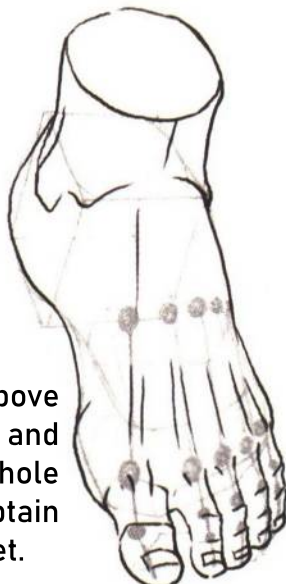
Mark the area where the toes start.



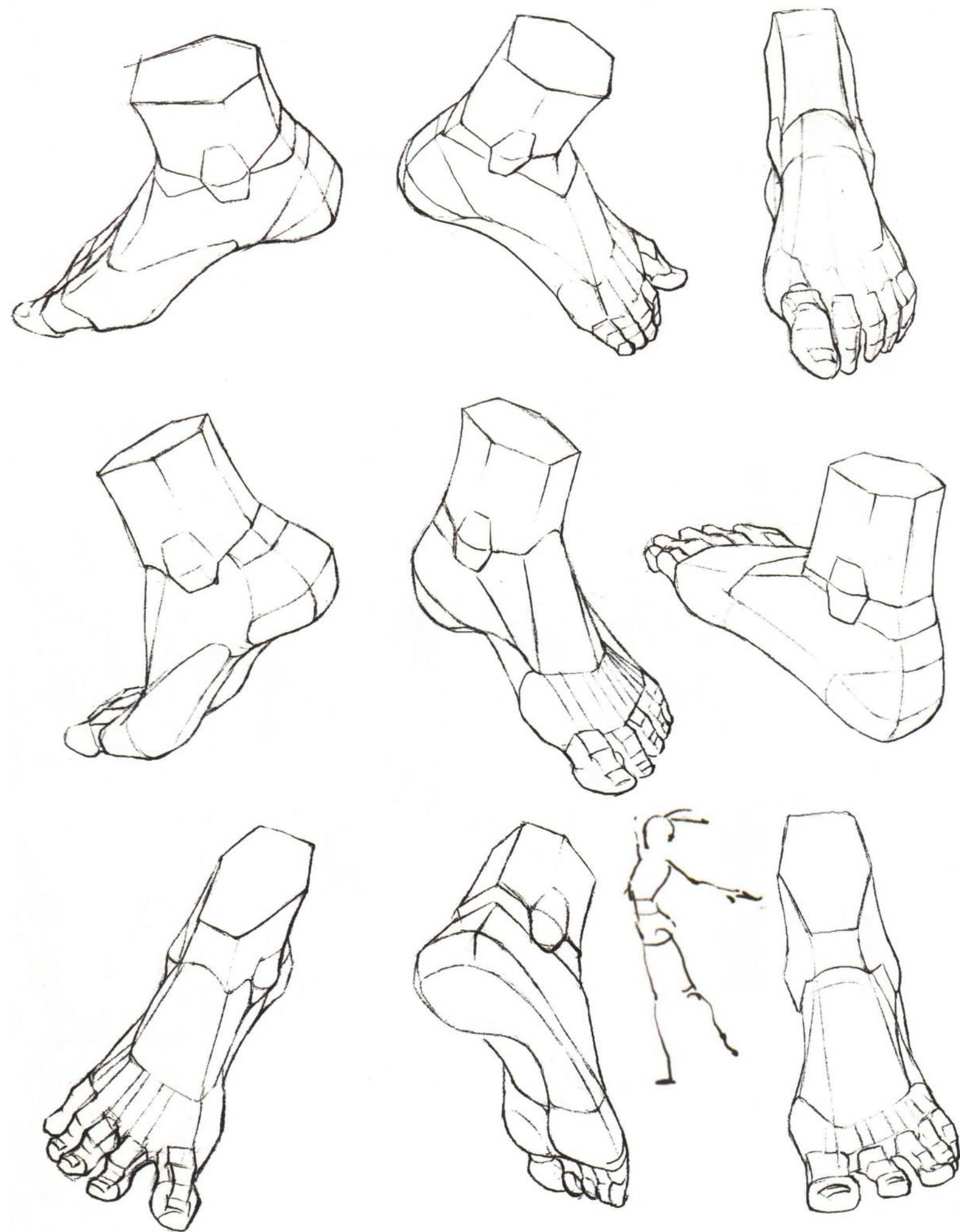
In order to better shape the toes, we delineate the position of each toe by means of dots and lines.



On the basis of the above geometry, the contour and structure of the whole foot is modified to obtain differently oriented feet.

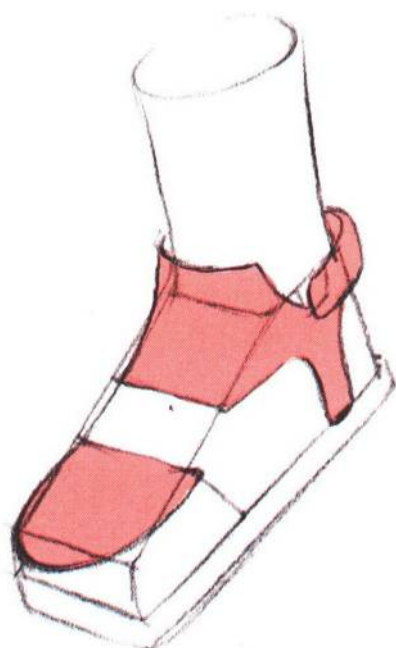
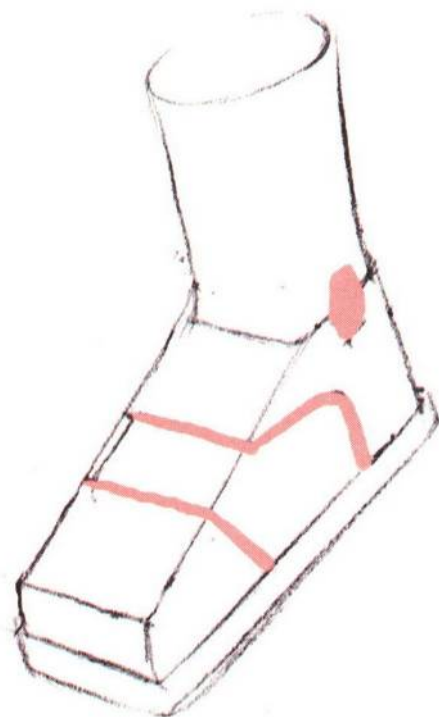
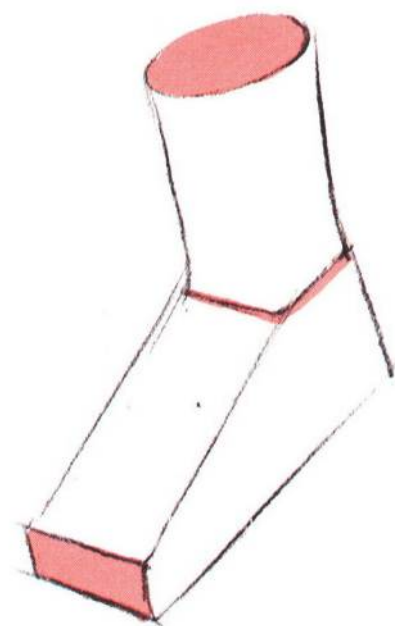


Based on these steps, we can practice drawing feet with multiple angles.

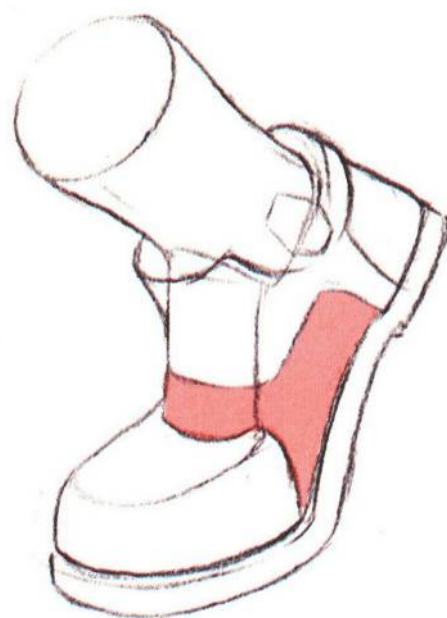
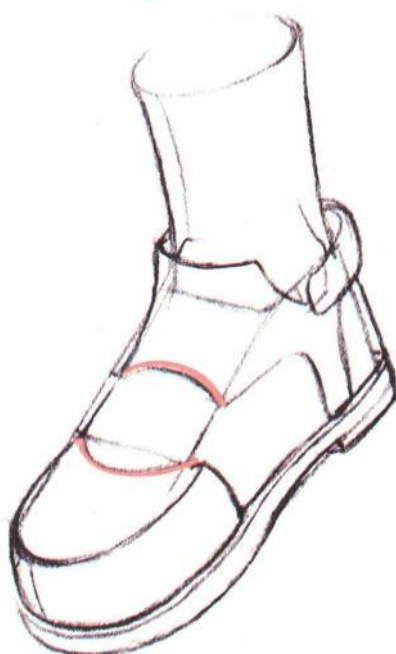


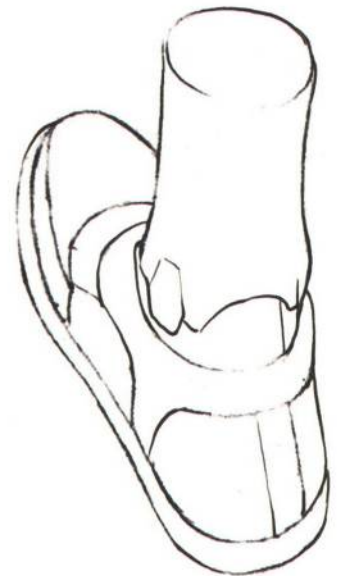
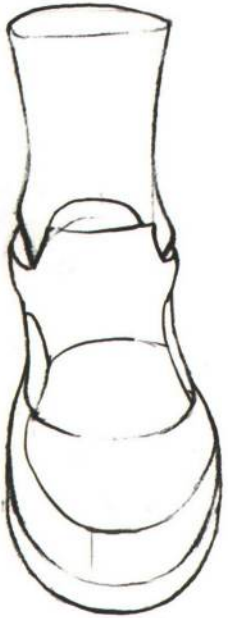
18 Shoe Drawing Exercises

1. It is not necessary to draw the foot in detail, so we can summarize it in simple geometry.
2. Mark the area where the ankle and the heel turn.
3. Draw the structural design of the shoe in each position.

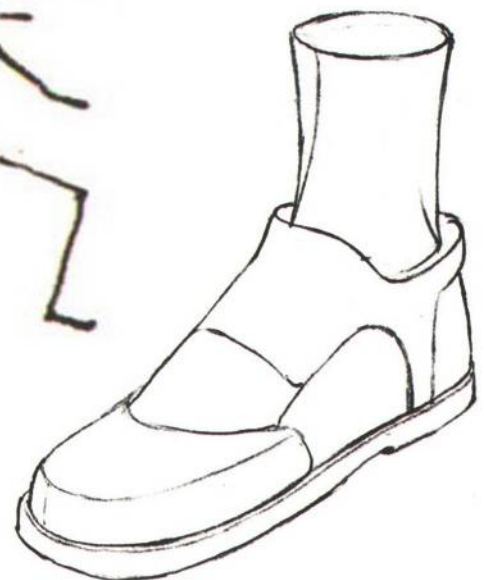
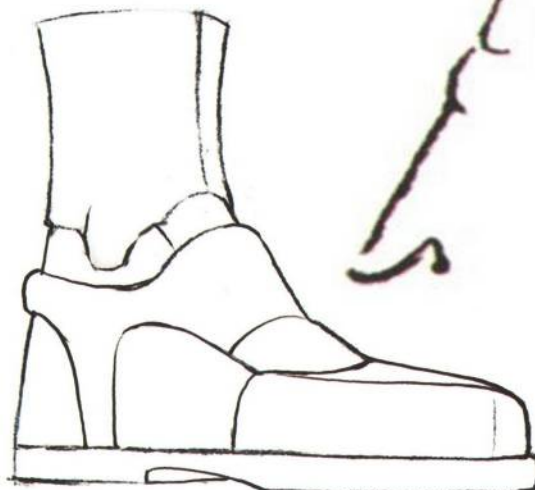
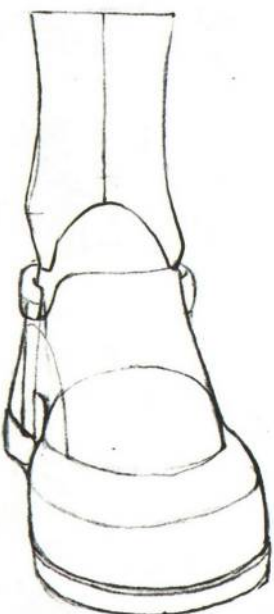
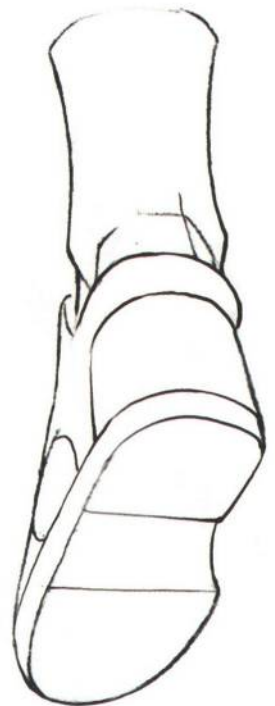
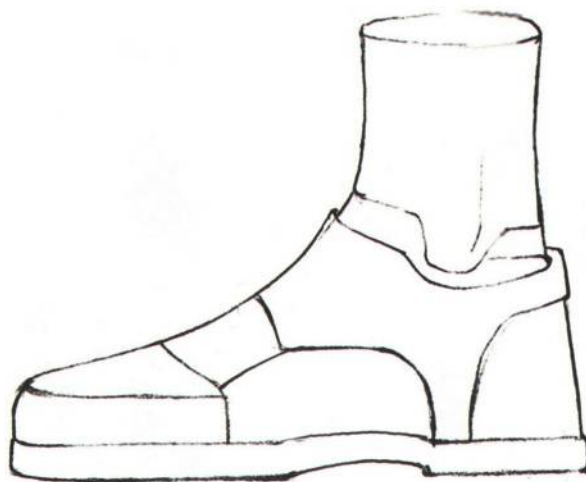


4. Generalize the structure of the sole and refine the upper.
5. The arch of the foot is shown in the above structure.
6. When the foot is in motion, the main movement and compression of the foot is concentrated in the area where the arch meets the toes, so the shoe should be drawn to reflect this movement and compression.

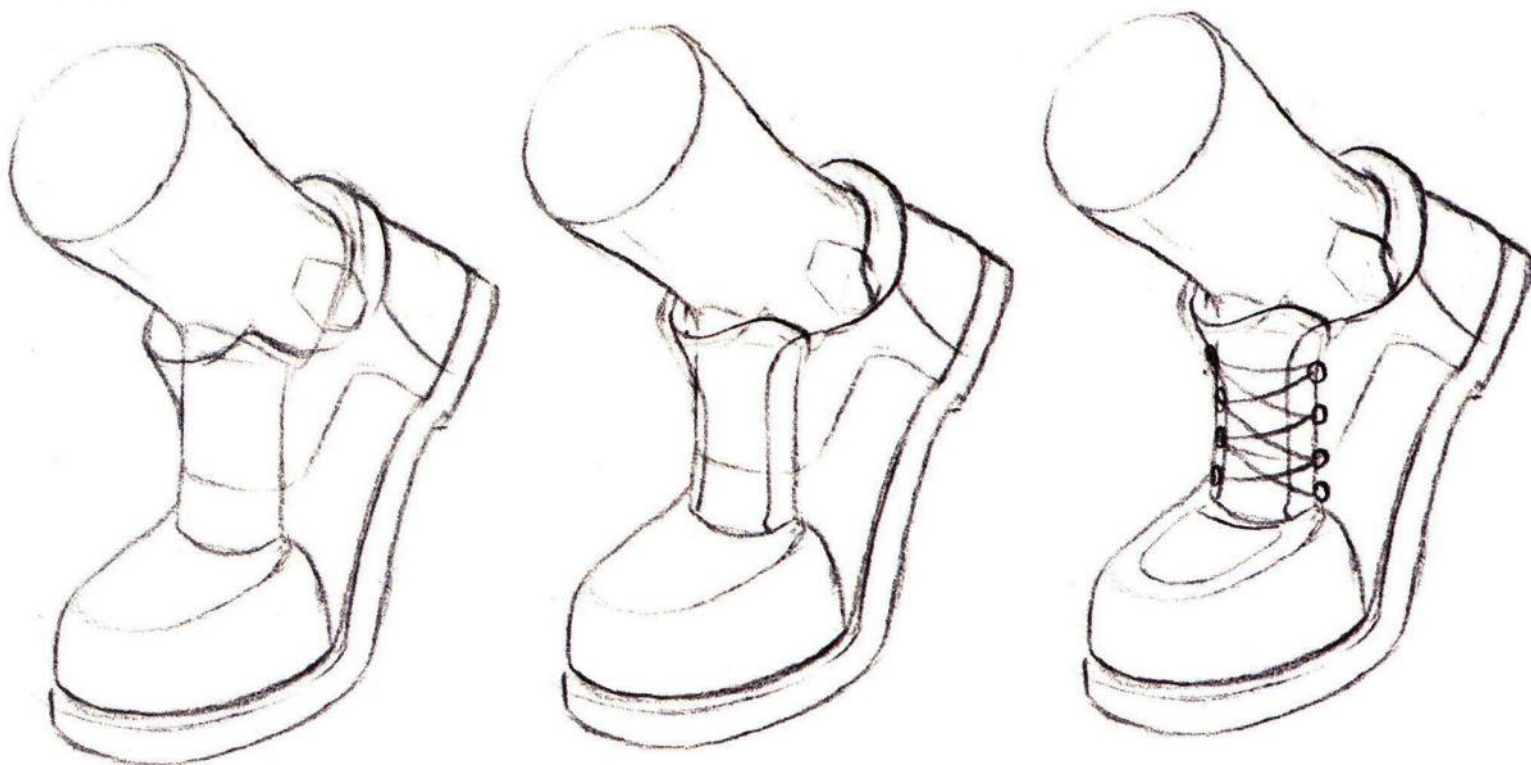




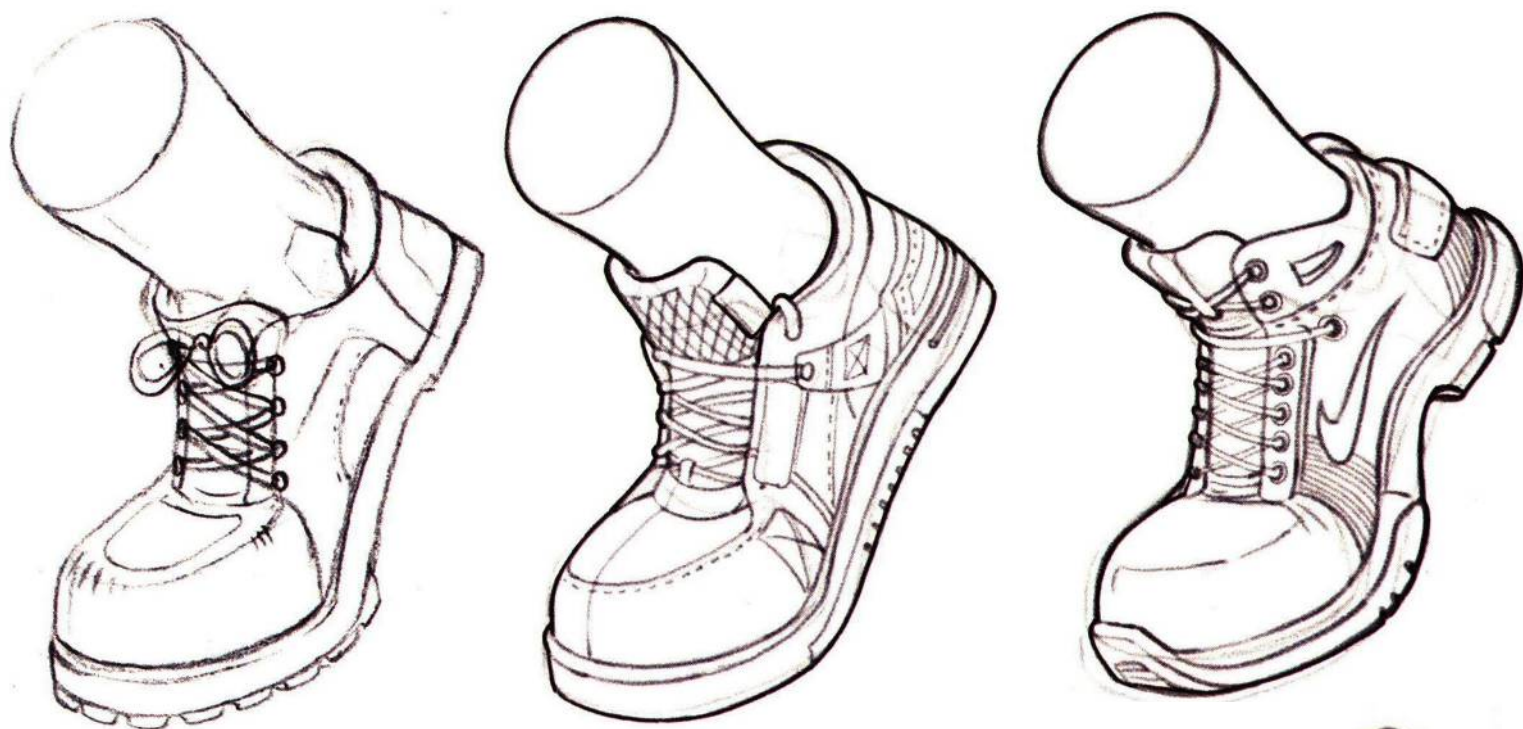
By following these steps, we can try to draw the basic shape of a shoe at all angles.



Steps for drawing different shoes: We can use the basic bottom shape of a shoe to shape different shoes.

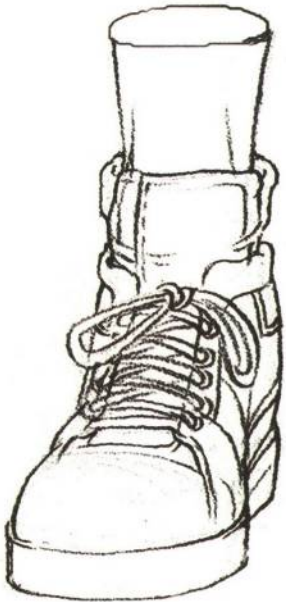
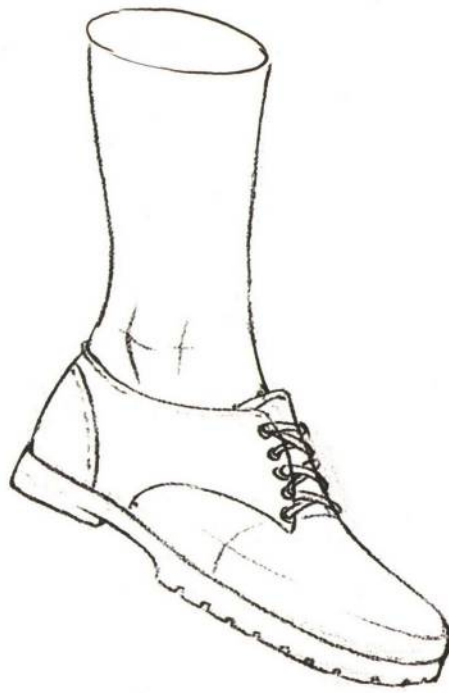


Draw the correct perspective of the shoe opening and the laces, and use the arch curvature previously identified for the laces. The basic structure of the shoe can be quickly sketched out by refining the shoe.



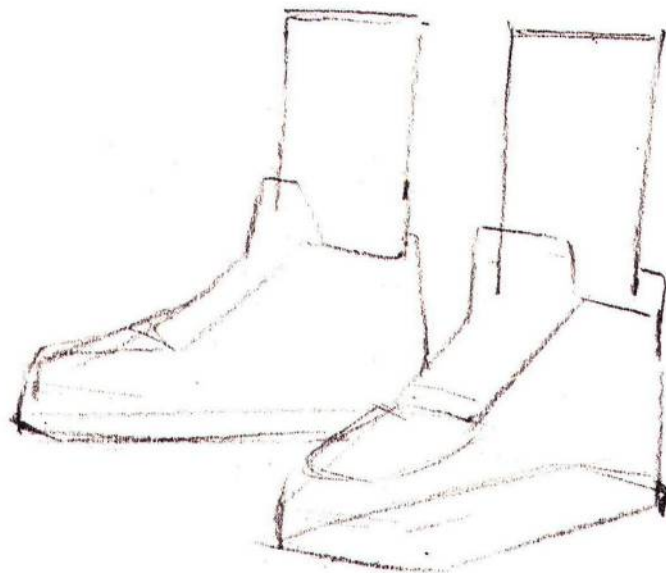
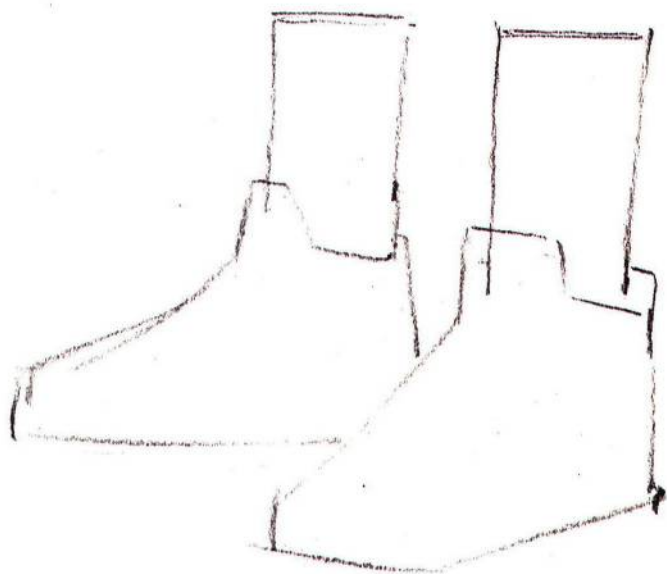
This basic shape can be used for different shoes, as there is not much difference in the basic shape of the shoe.





We can also observe different shoes in real life, and practice drawing basic soles.





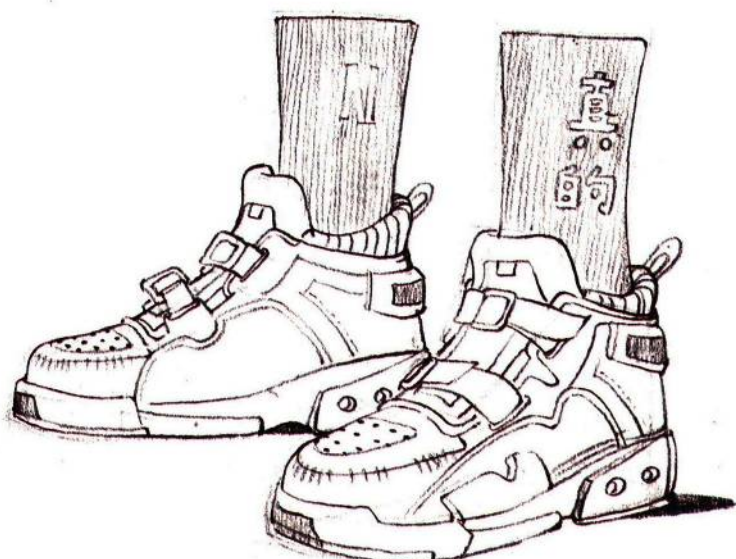
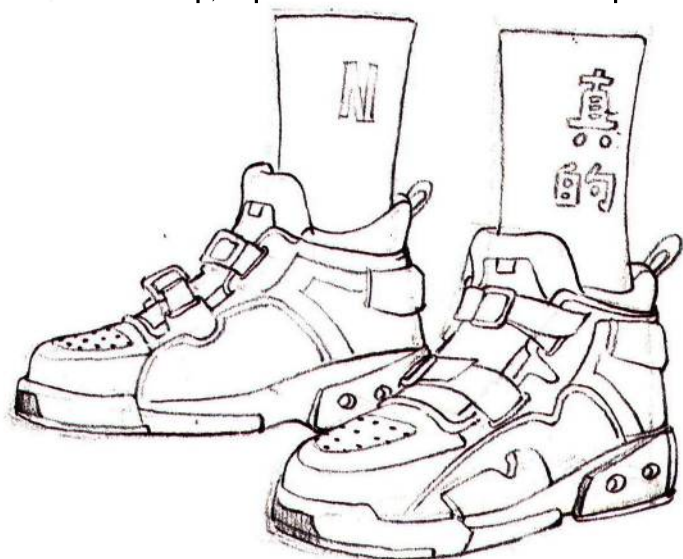
Steps for drawing shoes directly: Make a planar generalization of the suspects.

Draw the three-dimensional relationship of the shoe's upper and the spatial relationship between the shoe and the ground.



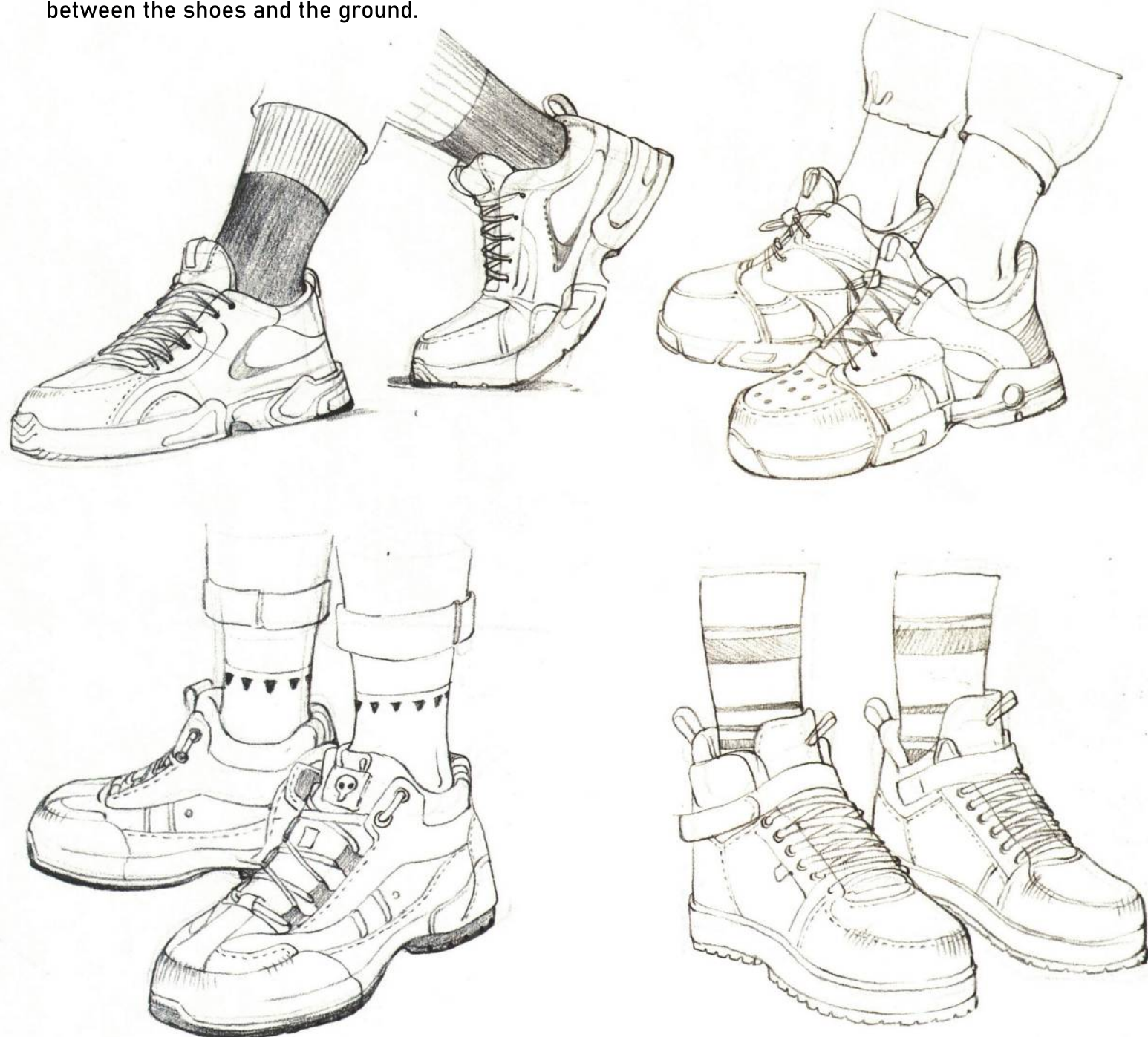
Divide and refine the structure of the shoe. In the refinement, focus on the structural relationship between the mouth, laces, and sole of the shoe.

Add details to each area of the shoe. Add some tones and small transitions, deal with the shadow relationship, a pair of shoes will be completed.





When we draw shoes, we can try to draw them one pair at a time to grasp the spatial relationship between the shoes and the ground.





Chapter Six

Body Support Exercises

人体支架

练习

- 01 方块人绘制练习
- 02 方块人默画练习
- 03 方块人肌肉添加练习
- 04 人体肌肉简化
- 05 人体动态的调整
- 06 快速绘制人体动态
- 07 在不同形状中画人体
- 08 女性人物速写
- 09 个性人物速写
- 10 人体支架优化练习
- 11 有力量感的人体绘制练习
- 12 人体支架综合绘制练习
- 13 水墨人体动态绘制练习



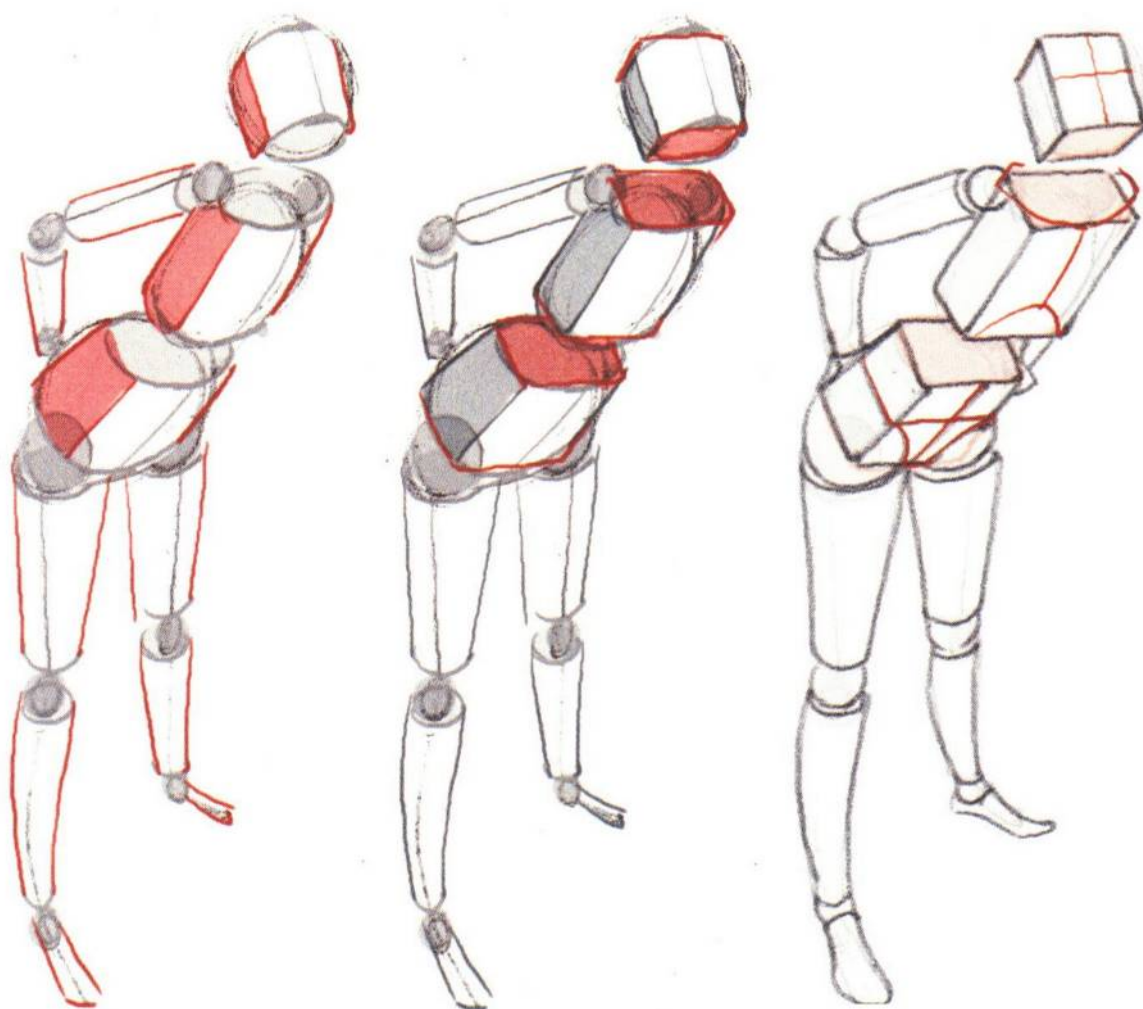
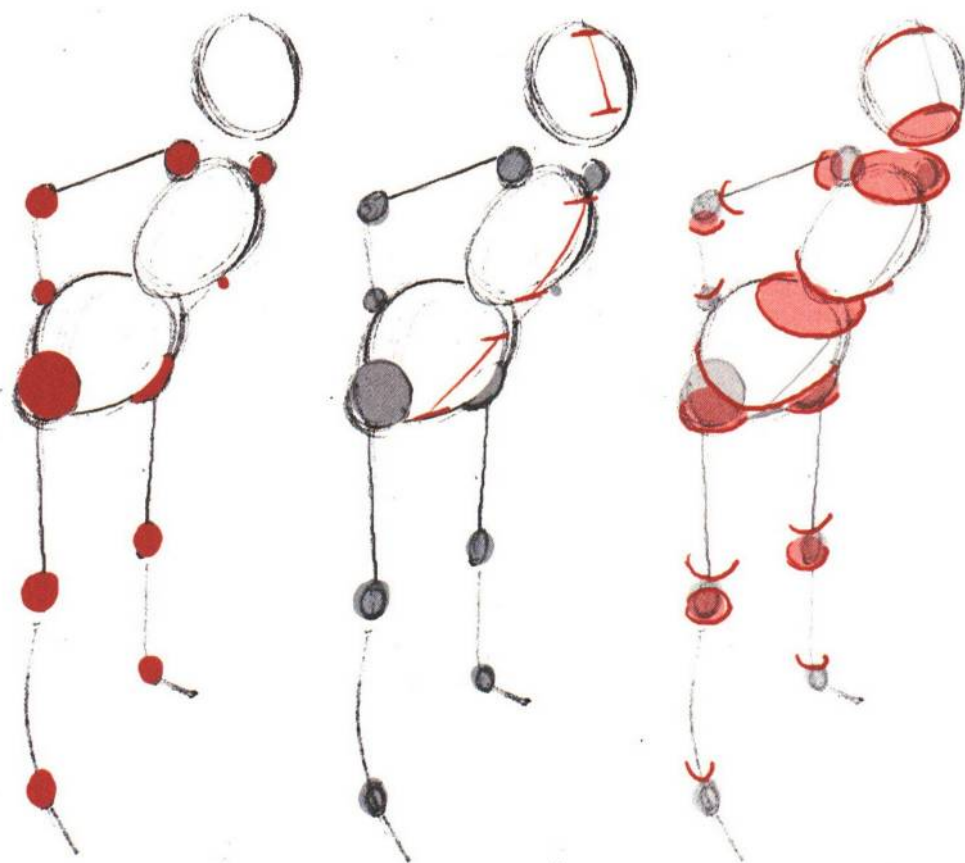
01 Cube Man Drawing Exercise

Draw the basic stick man.

Label the head, chest, and crotch.

Draw the relationship between the circular sections of each joint, making sure that the curvature of each section corresponds to the change in perspective.

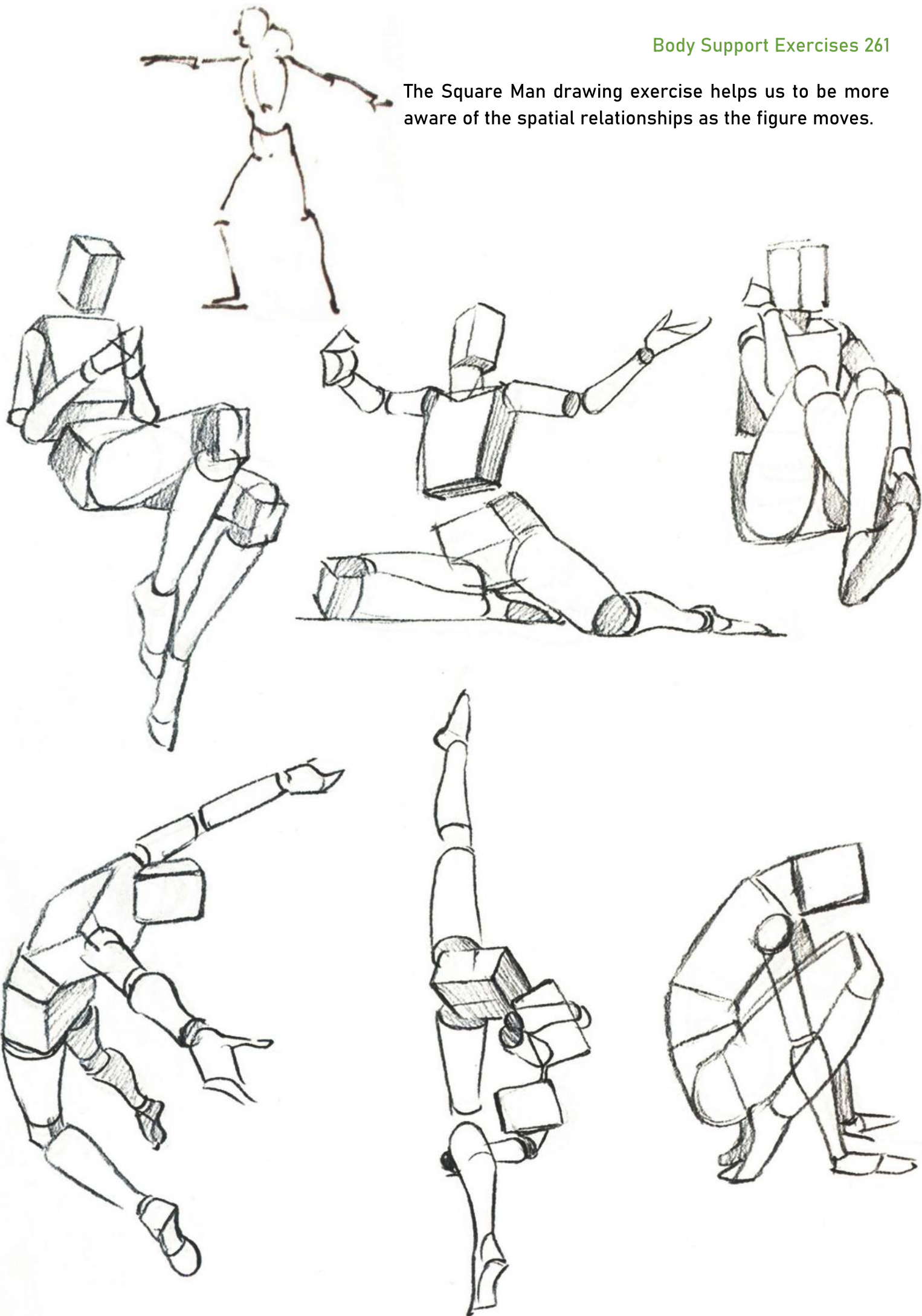
Draw the thickness of the head, chest and hips, and the thickness of the limbs.

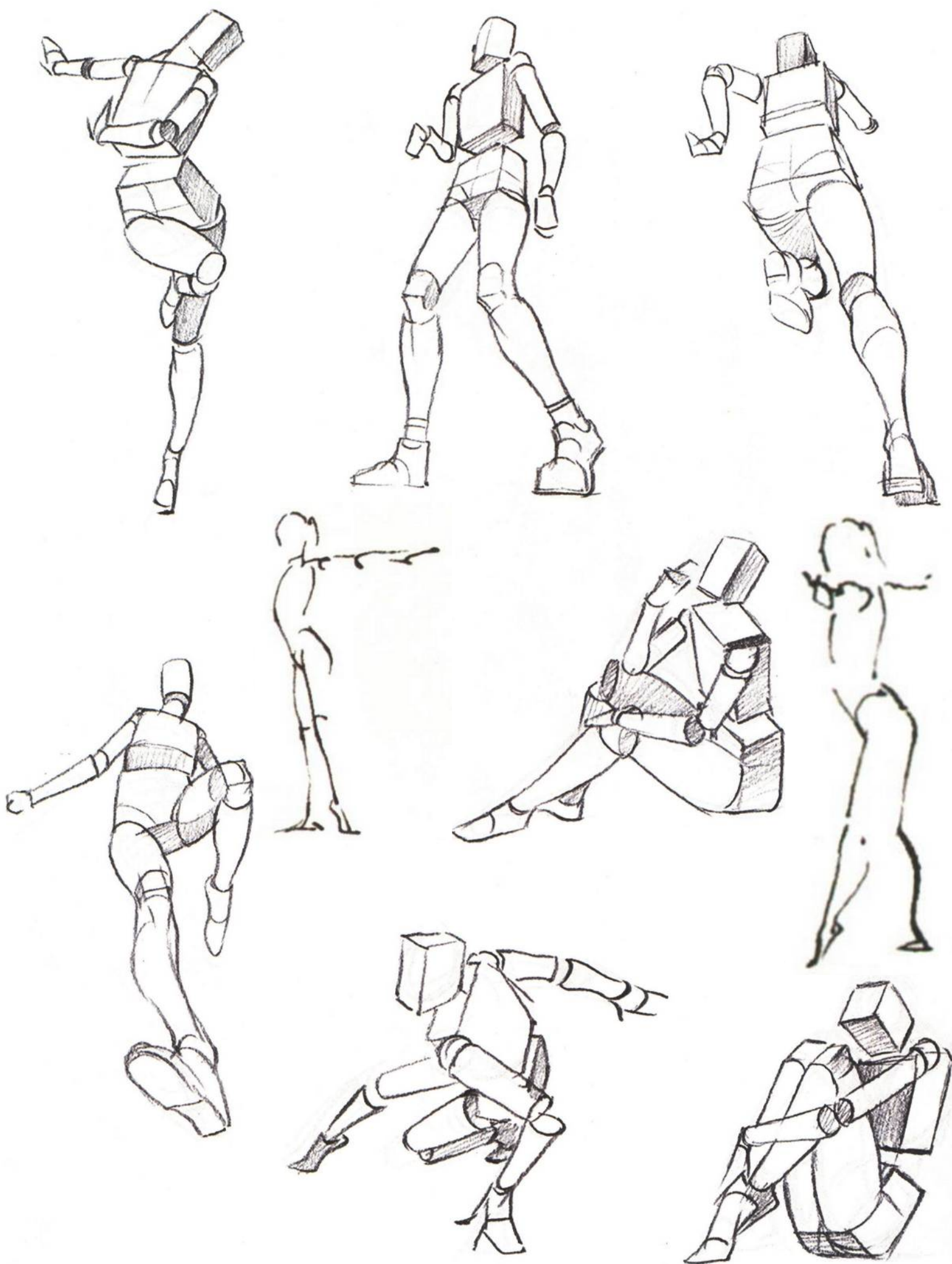


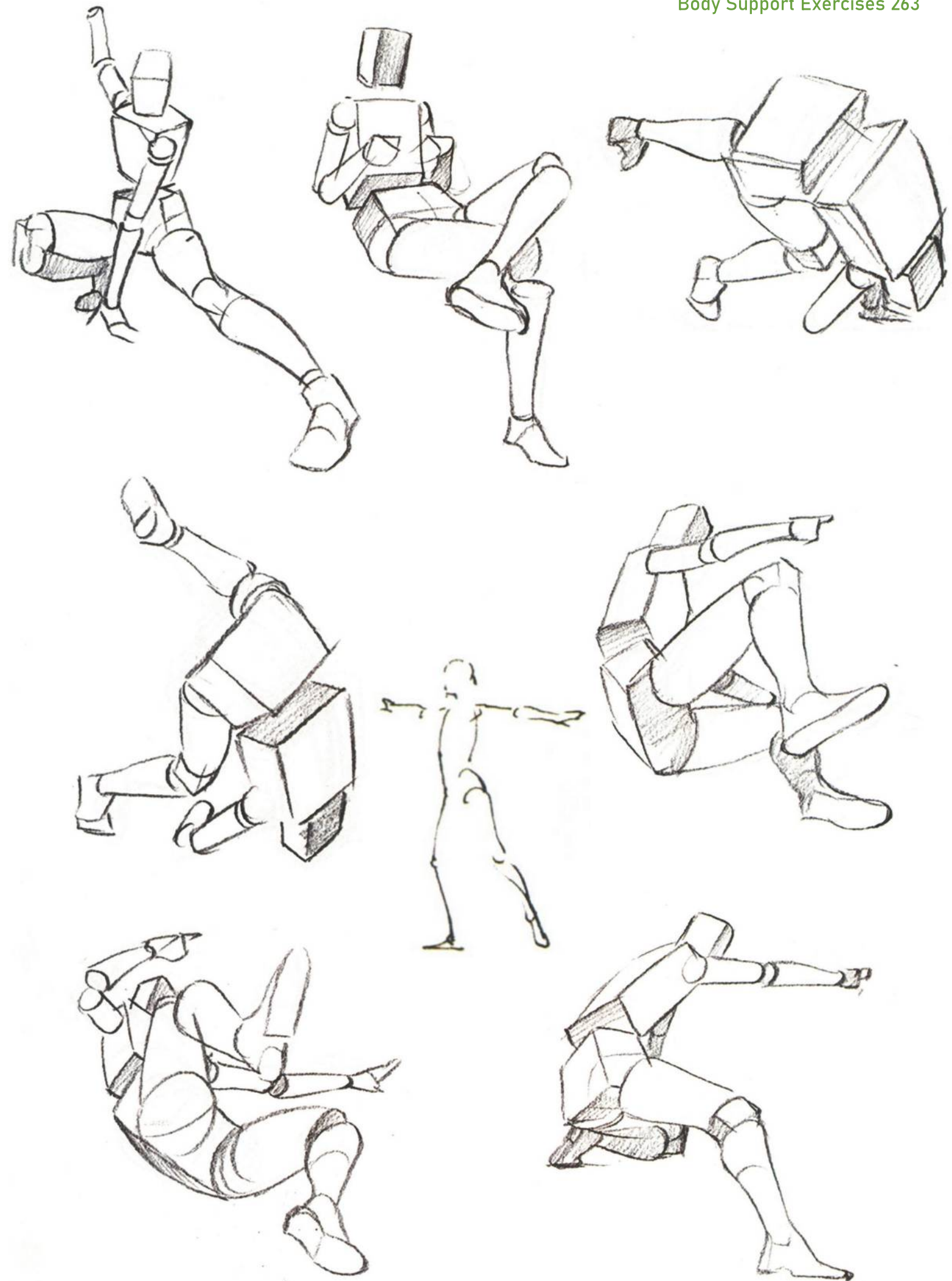
Shape the circular sections of the head, chest, and hips into square sections to create a prototype of the square figure.

Simple structural divisions in the head, chest and crotch, and refinement of the limbs and feet complete the square figure.

The Square Man drawing exercise helps us to be more aware of the spatial relationships as the figure moves.





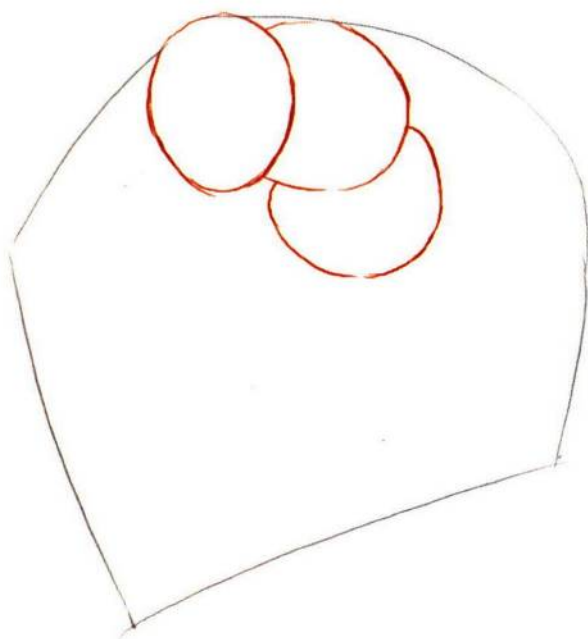


02 Cube Man from Imagination

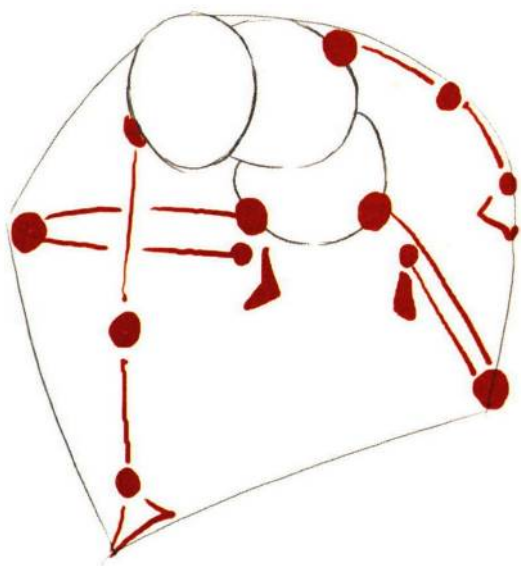
Draw a flat shape on a piece of paper.



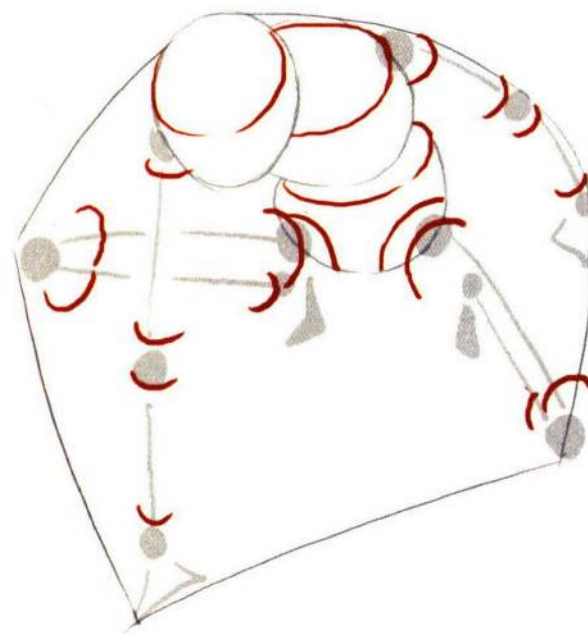
Draw three circles representing the head, chest and crotch, and try to show the perspective of these three circles.



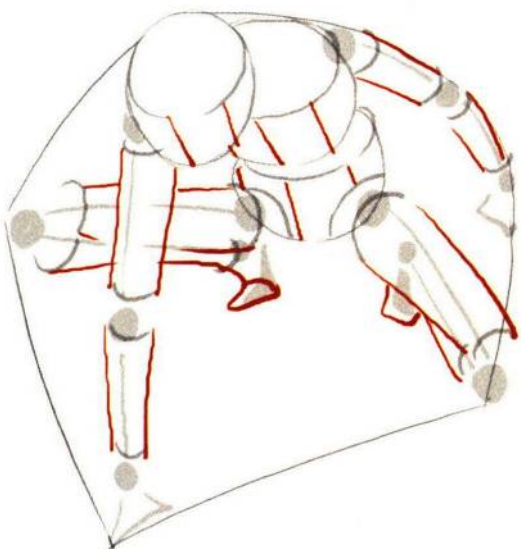
With the torso in the correct position, draw the limbs and label the joints of the limbs, and try to fill the entire planar shape with the limbs.



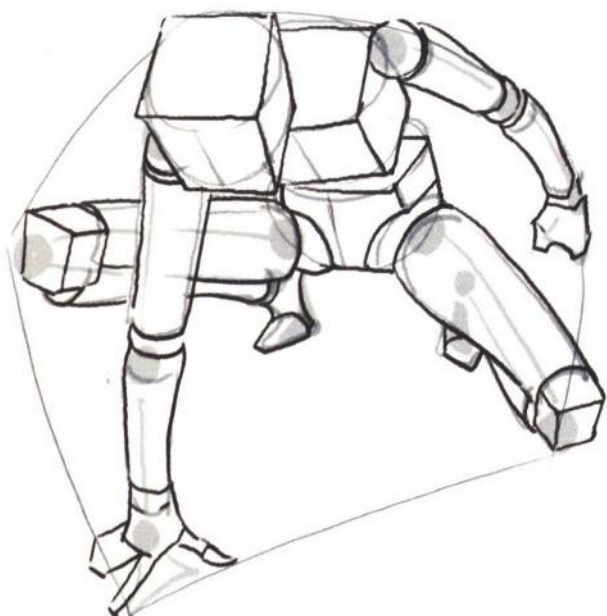
Draw the direction of the curvature of the limbs at each joint, and draw the cross sections of the head, chest and crotch.



Mark the orientation of the head, chest and hips and draw their thicknesses, then draw the thicknesses of the limbs and feet.



By squaring the above basic structure, a more vivid and natural square human can be obtained.



The different shapes of the silhouettes make them more dynamic and unique.



03 Square Man Muscle Adding Exercise

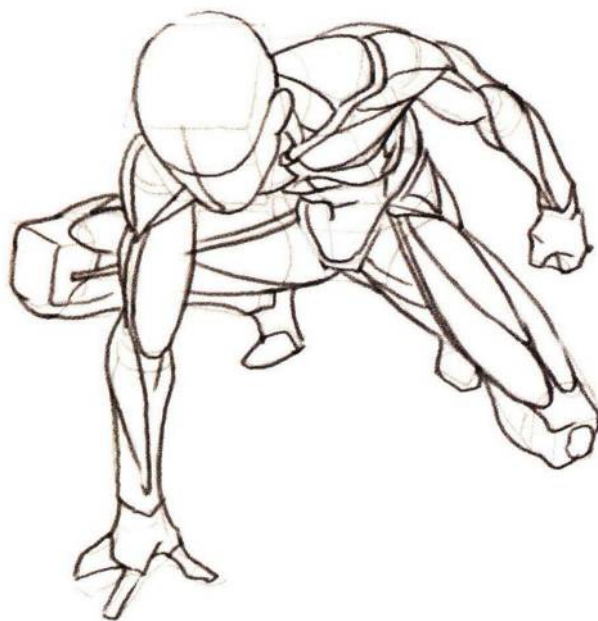
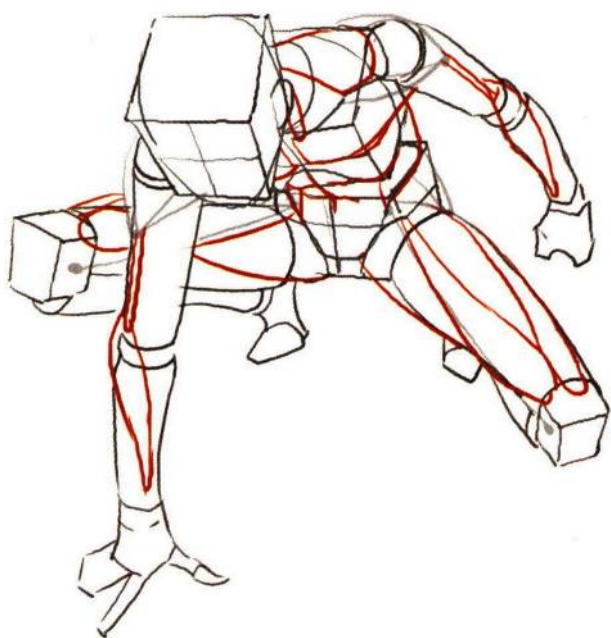
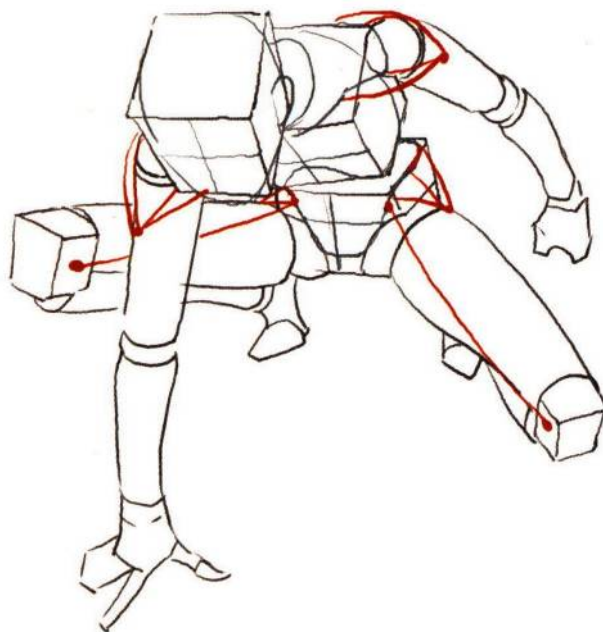
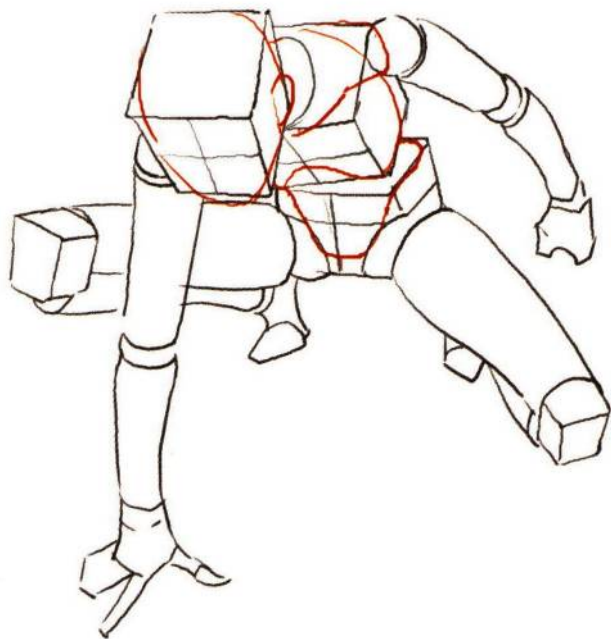
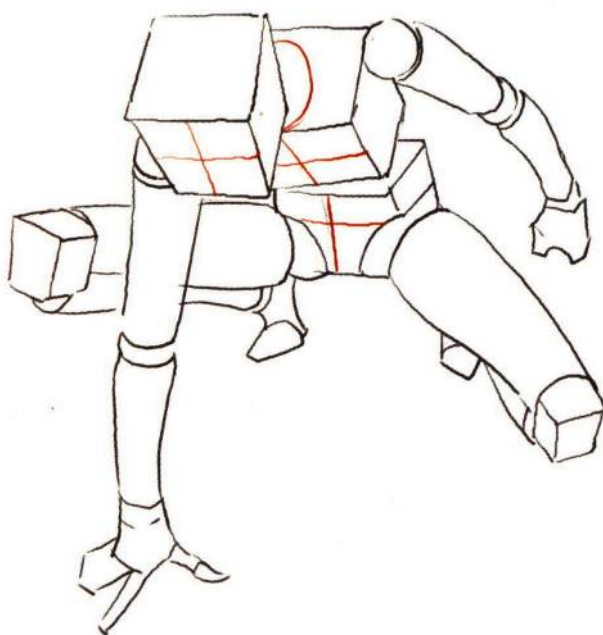
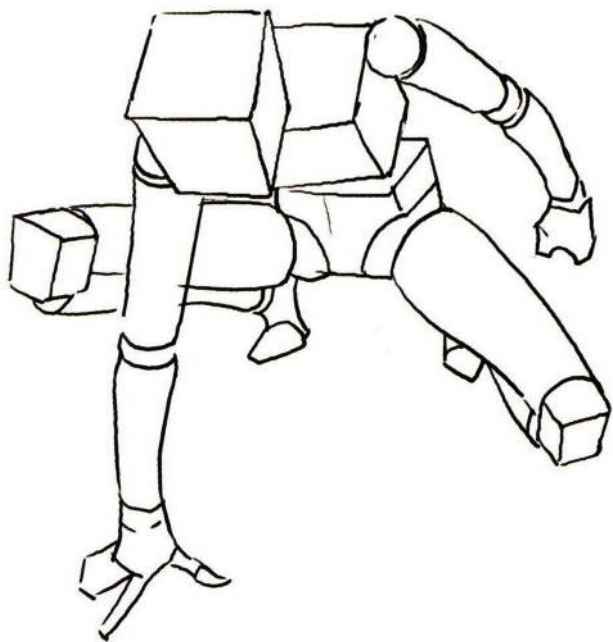
How to add muscles to a cube person? Find the center line of the cross on the torso of the Cube Man.

Briefly summarize the basic shape of the bones in the head, chest, and hips, and draw the general outline of the ears.

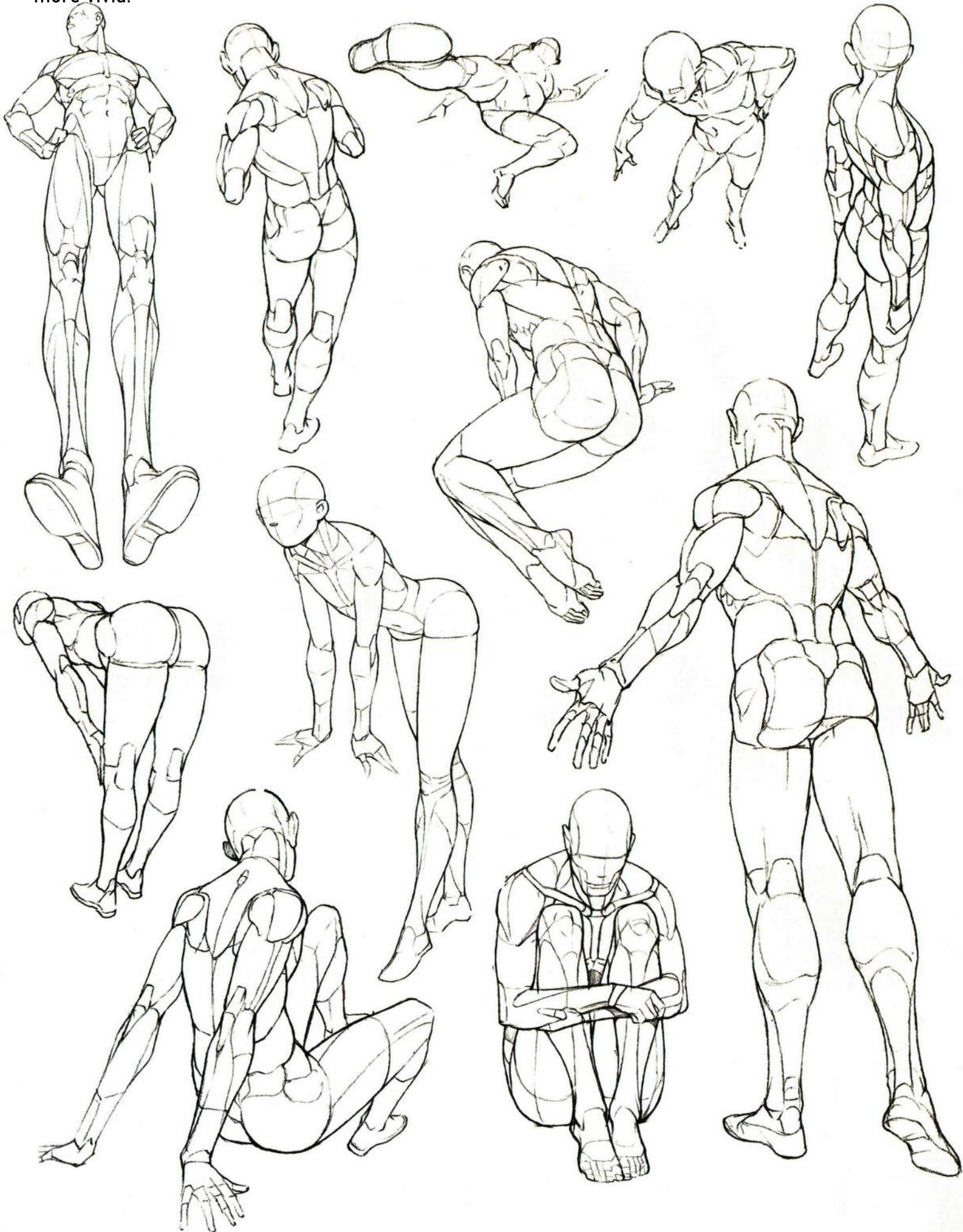
Draw the muscle connections at the main joints.

Draw the muscles of each limb.

Further refine the muscles and then work on the lines. When drawing the muscles, make sure that the perspective of the joints is accurate.



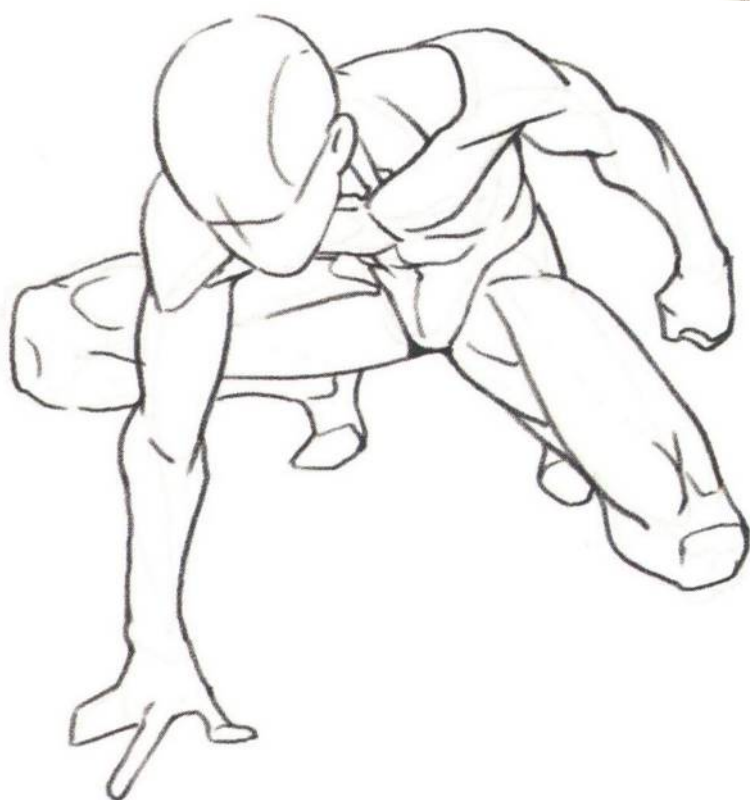
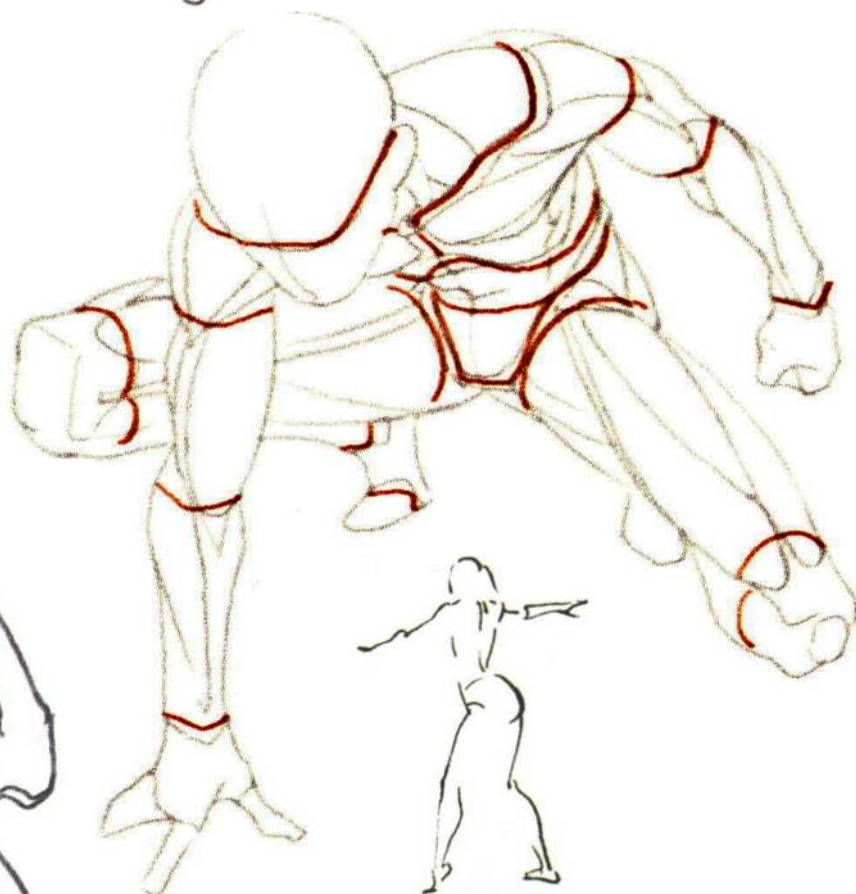
We can add muscles to the square man we practiced drawing before, so that the muscles will look more vivid.



04 Simplification of muscles

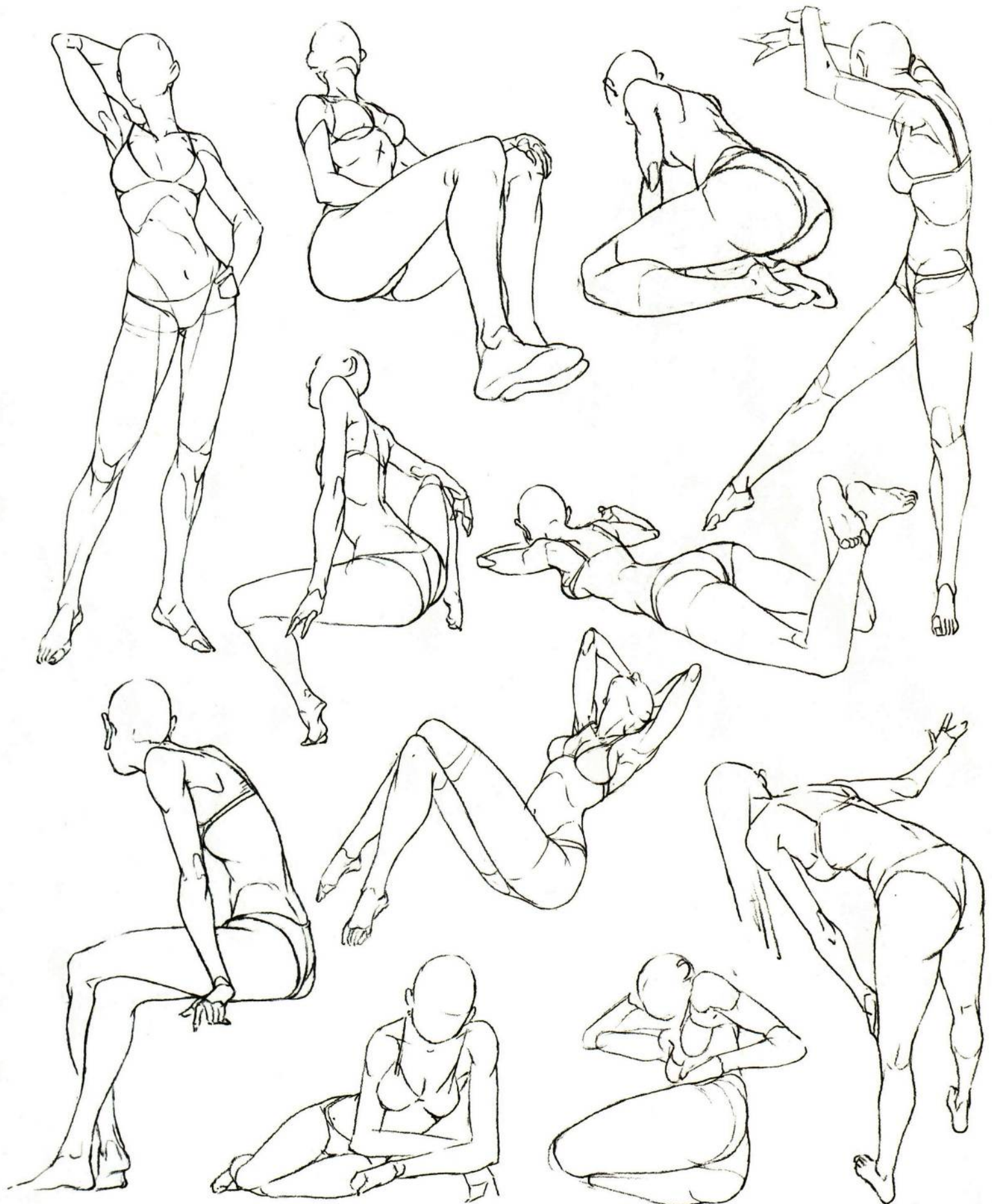
It is not necessary to draw every muscle in the human body, as this would make the body look very unnatural. Therefore, we need to simplify the muscles.

Before simplifying, we need to make sure that the curvature of the joints of the human body is correct. In order to create a vivid and natural human structure, we need to emphasize the relationship between the muscles at each joint when adding muscles.

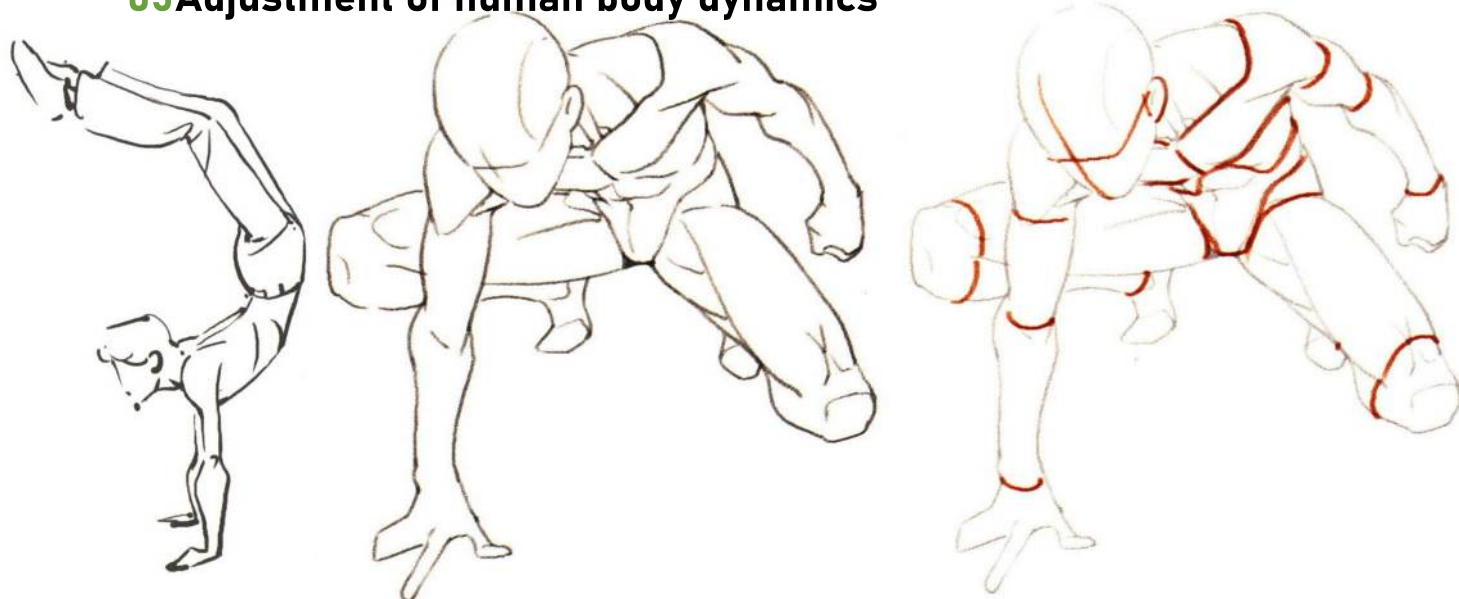


Once we have clarified the curvature of each joint, we can follow the curvature of the joints to draw the muscle interspersed with the muscles on the human body, and simplify the muscles outside the joints, so that the muscles will be closer to the real human muscles.

When simplifying the muscles, attention should be paid to the interspersed relationship of the muscles in the joints of the human body should be accurately portrayed.



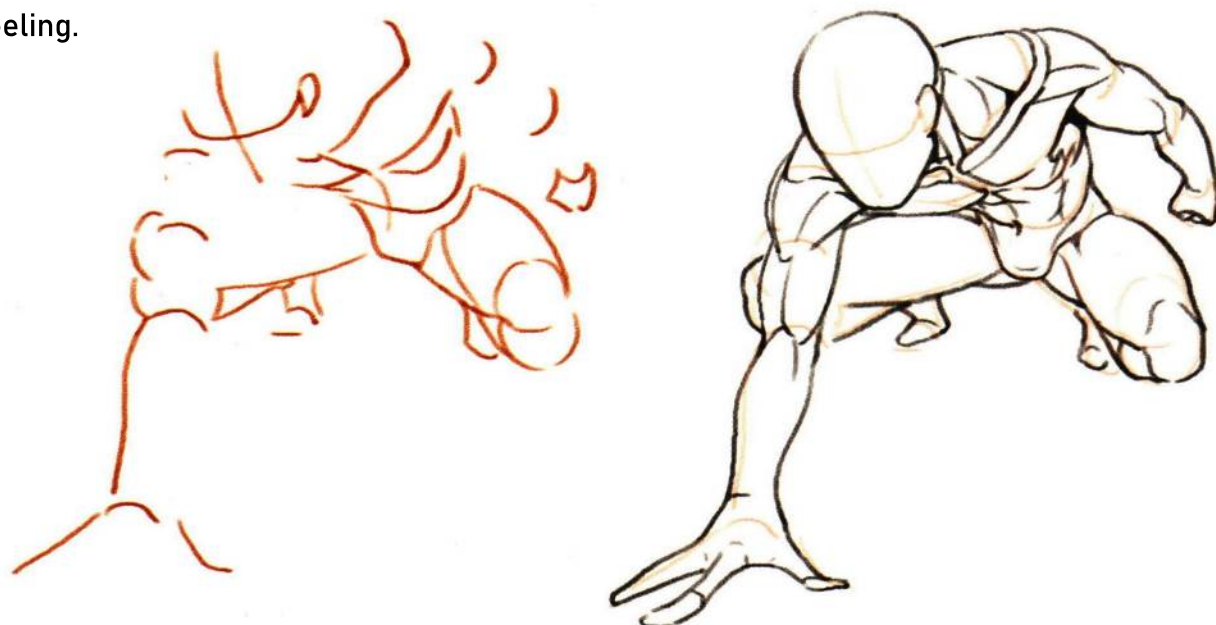
05 Adjustment of human body dynamics



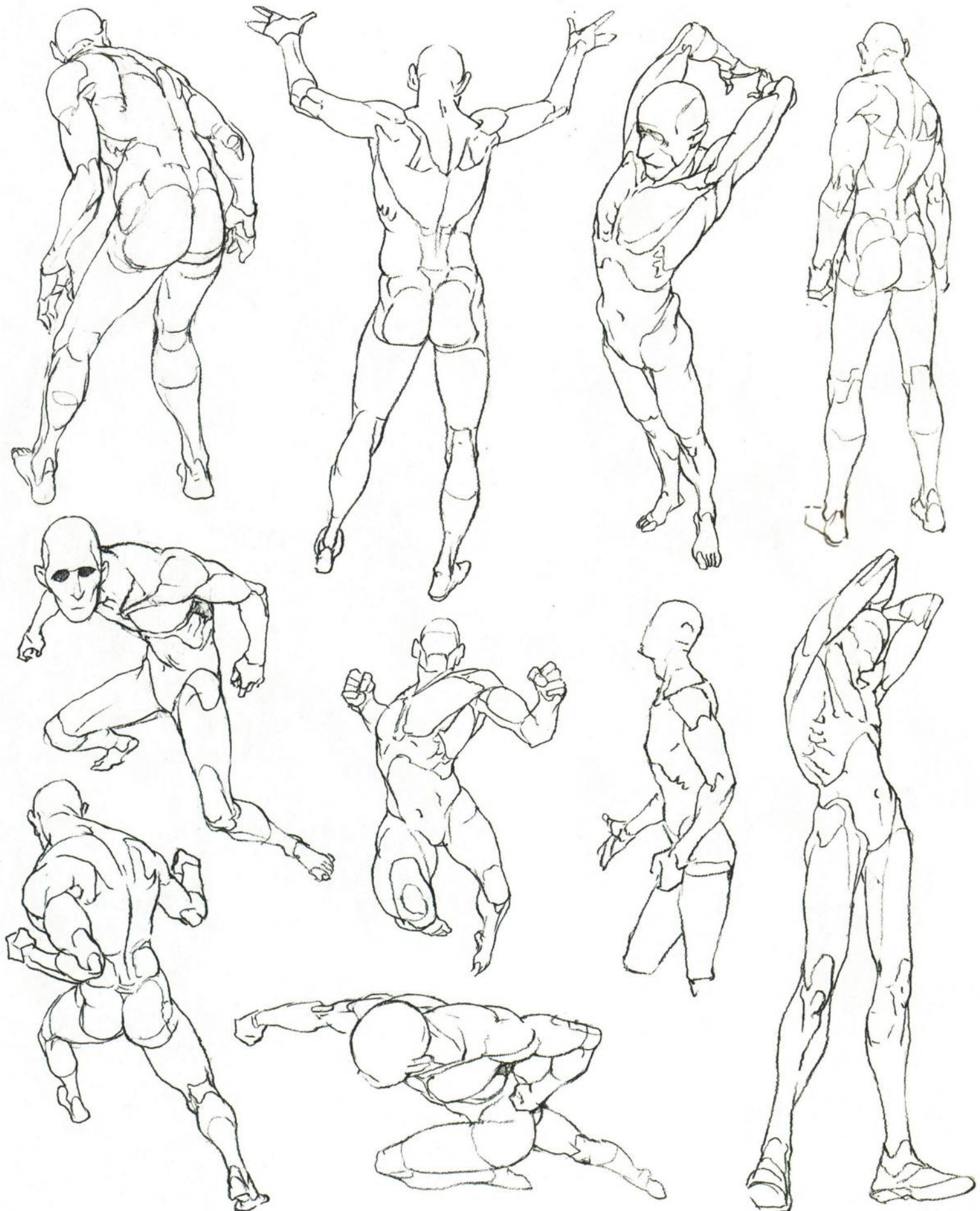
After simplifying the muscles, we are often still not satisfied with the dynamics of the human body. The key to adjusting the human body is to adjust the curvature of each joint. Often, the curvature of the joints is correct, but the resulting motion is not natural.



Then we can try to adjust the direction and size of the curvature of each joint. After adjusting the curvature, we can draw the human body in detail, and the resulting human body motion will give you a different feeling.



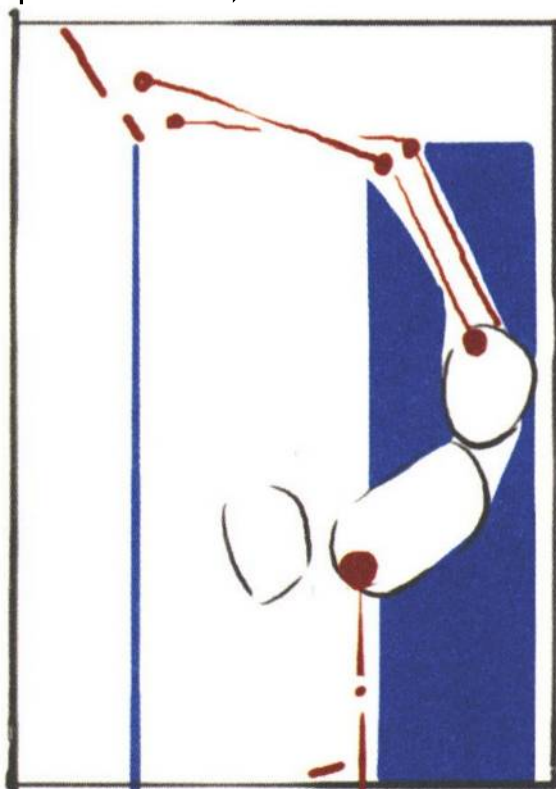
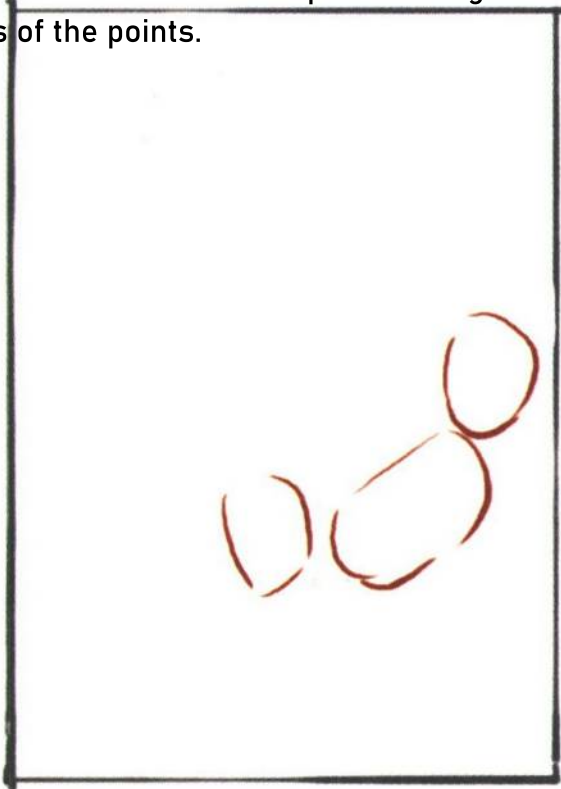
When doing figure drawing exercises, we can try to adjust the curvature of the joints of the human body.



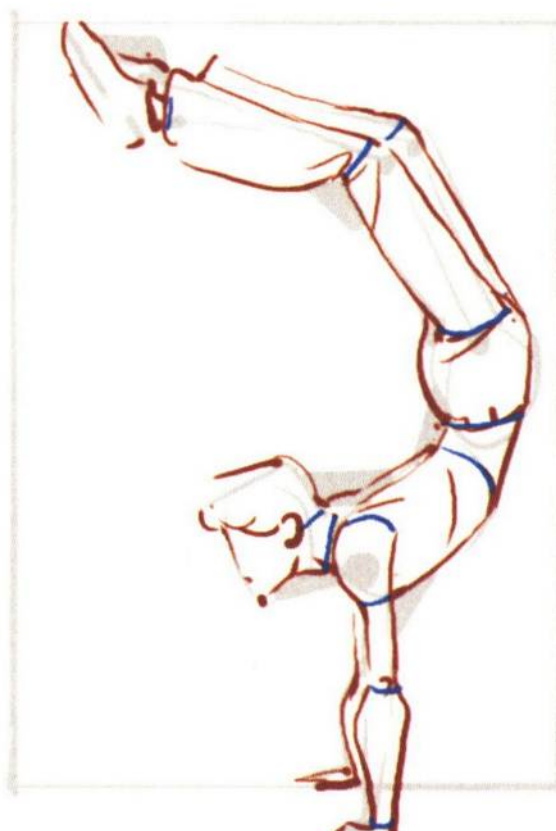
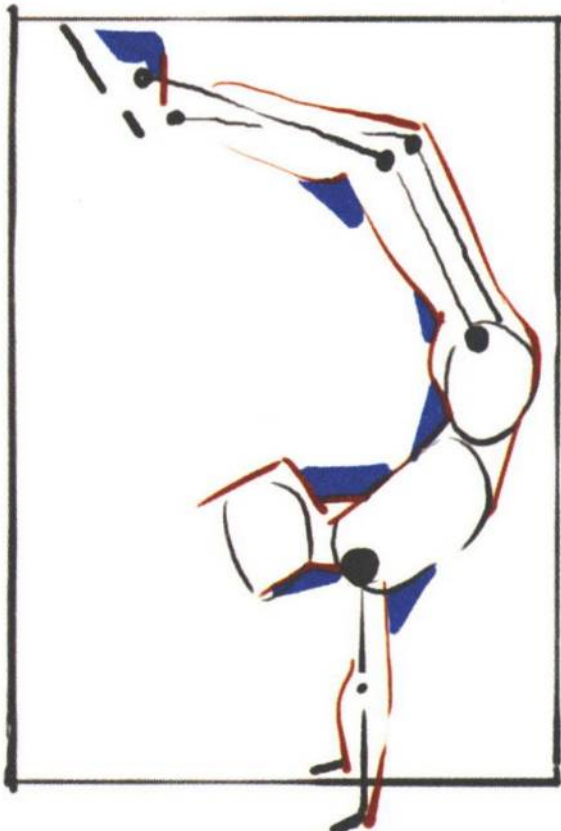
06 Quickly draw the human body dynamics

Draw the frame of the area where the human body is located. Make sure that the circles representing the head, chest, and hips are correctly positioned in the frame.

To identify the joints of the limbs, it is possible to generalize the human body by means of simple flat shapes in order to avoid the points being too high up on the limbs, and to find the corresponding positions of the points.



By creating a sense of relief in the joints, drawing the thickness of the body, and finally connecting and refining the parts with smooth lines, you can quickly obtain a more generalized human body dynamic.



Doing the following character drawing exercises will enhance our sense of the flat scale of the character, which will play a great role in drawing aesthetic characters later on.



If we have a strong grasp of planes, we can summarize the figure in a flat way, marking the intersecting lines at each joint, which is a good entry point to familiarize ourselves with the structure of the figure and to control it.

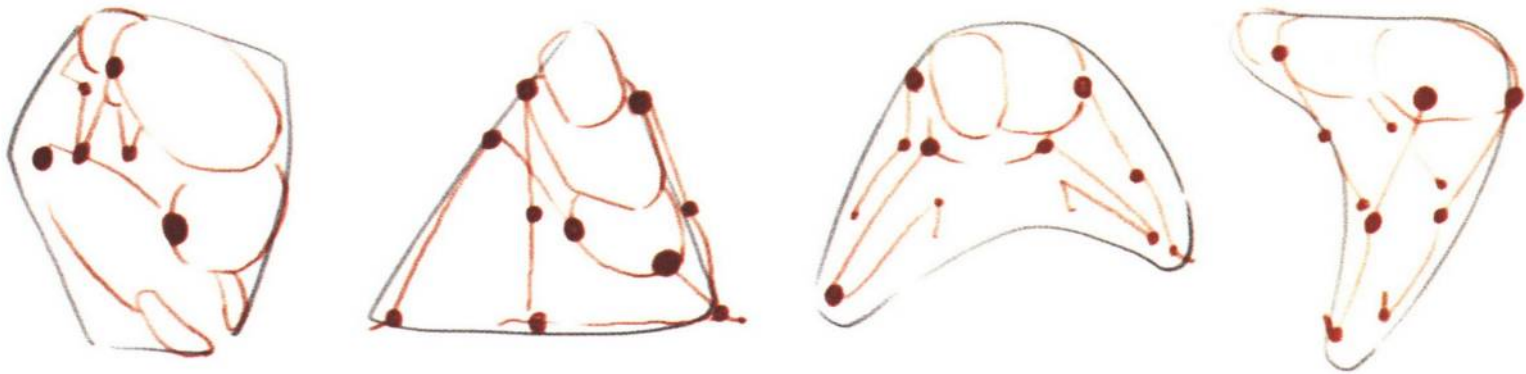


07 Drawing the human body in different shapes



Draw random flat shapes on a piece of paper.

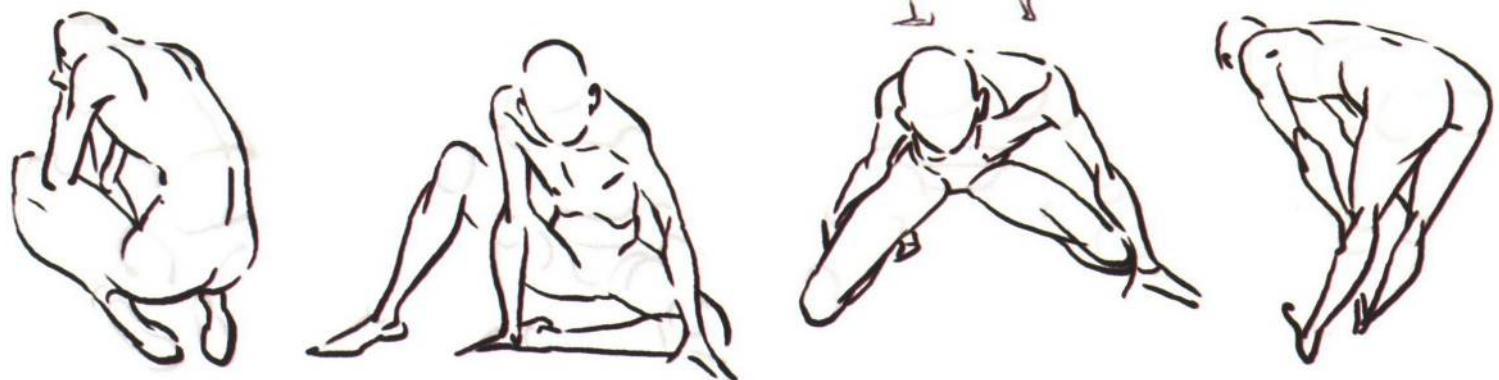
Make different body supports in each of these flat shapes.



Draw the curvature of the figure, making sure that the humidity is accurate.

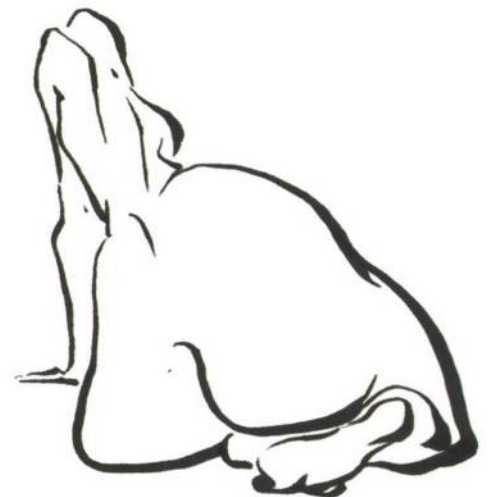


Connect the outer contours and refine the parts, paying attention to the interlacing lines at the joints.

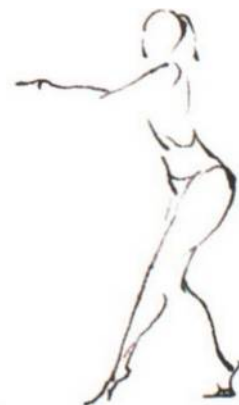
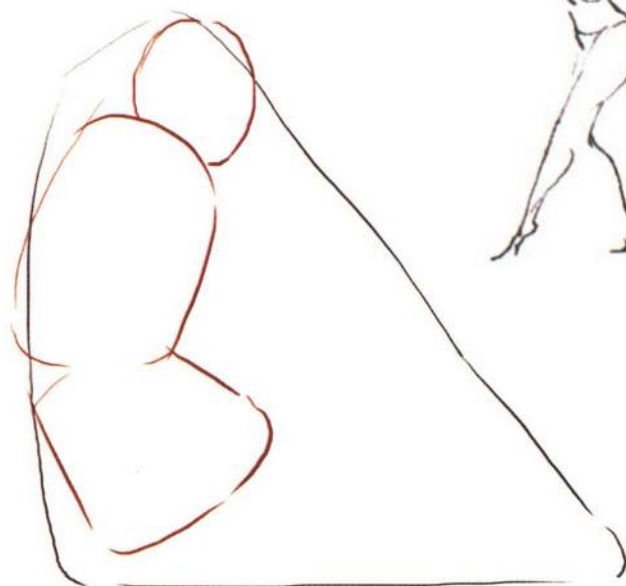
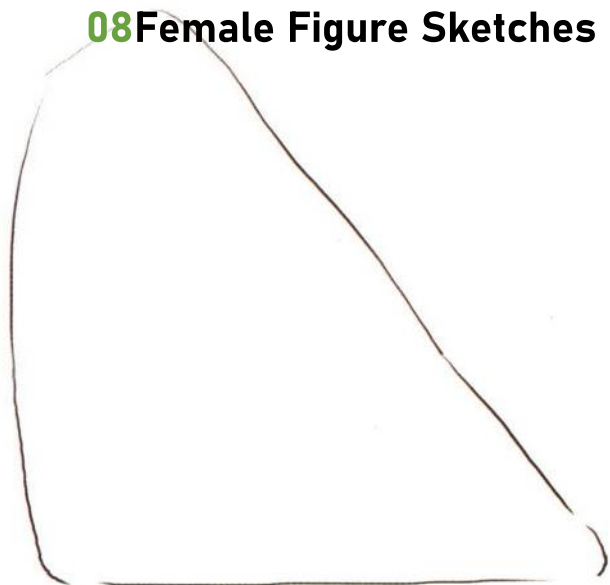


Drawing the human body in different shapes will help us to draw more varied figures.

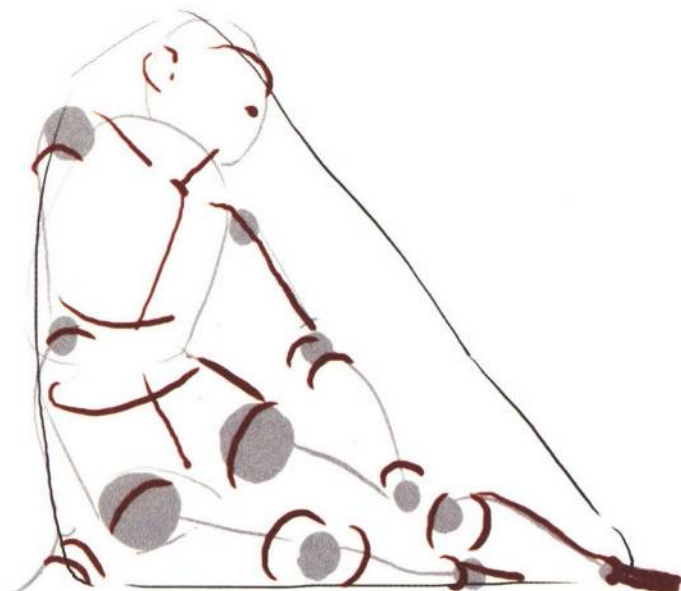
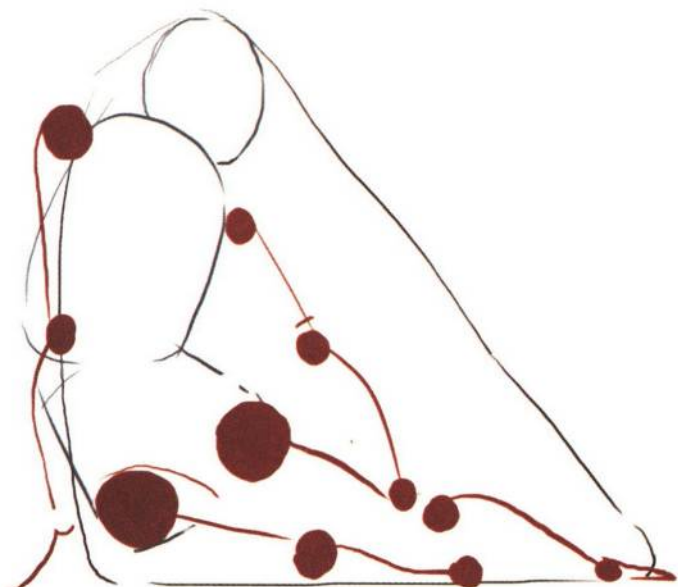




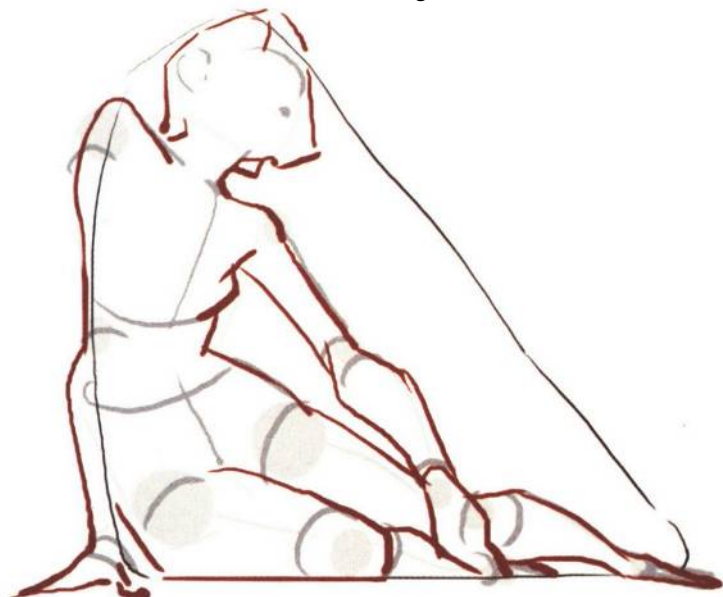
08 Female Figure Sketches



Draw a simple flat shape. Draw a circle representing the head, chest, and hips on top of the flat shape. Label each joint. Marks the arc orientation of the character.



Refine the silhouette and body lines of the figure on the basis of the stand and draw the hair, clothes, and shoes of the figure.

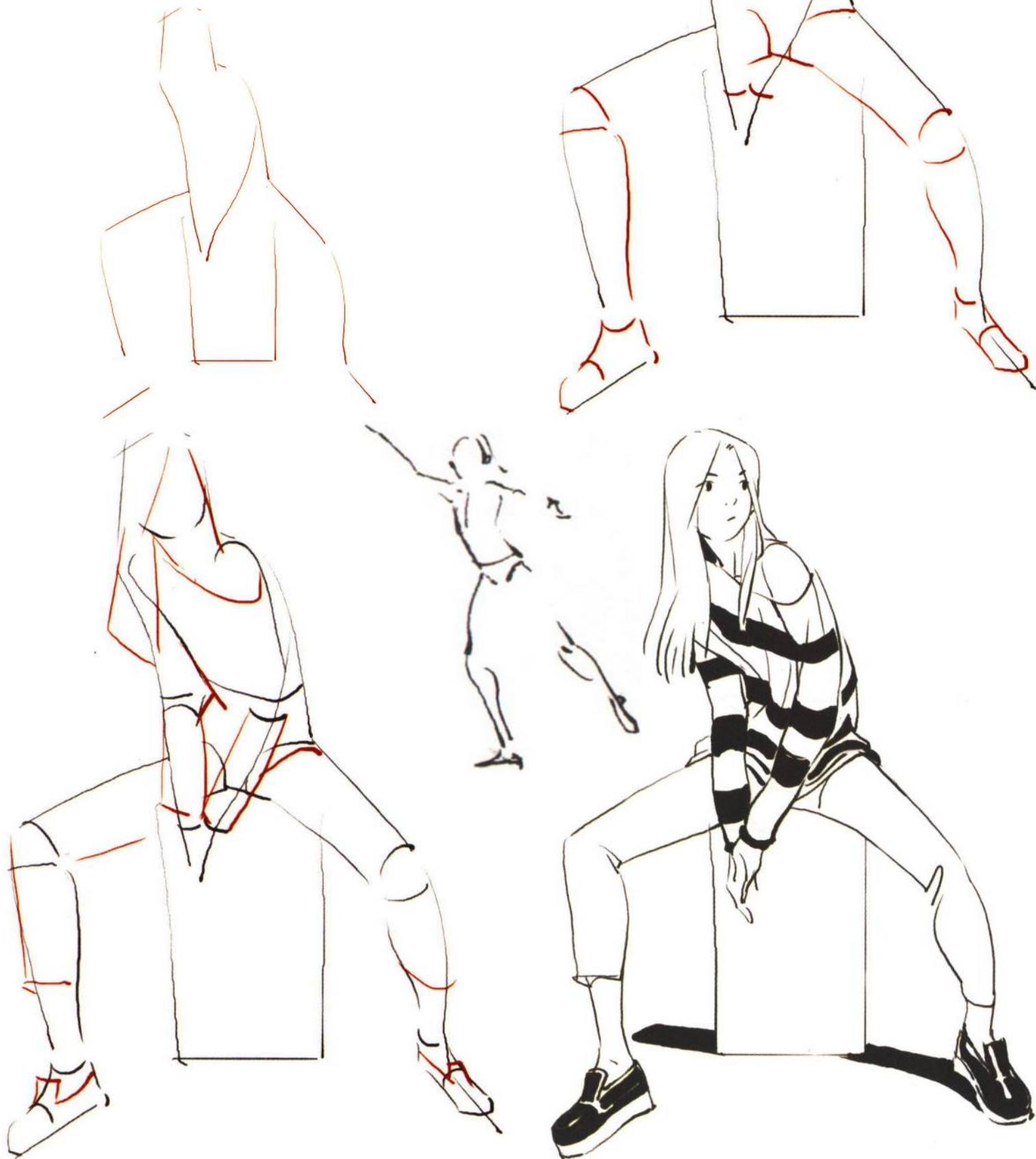


We can also refer to the following picture, change the position of the human body in the flat shape, draw more interesting human body dynamics.



09 Character Sketching

When we have reached a certain level of understanding of shapes, we can strengthen the uniqueness of the shapes in our regular sketches and express the three-dimensional relationship of the shapes in a reasonable way, which is very helpful for our character sketches.



When we know enough about the structure of the human body, we can try to draw some different styles of personality sketches.

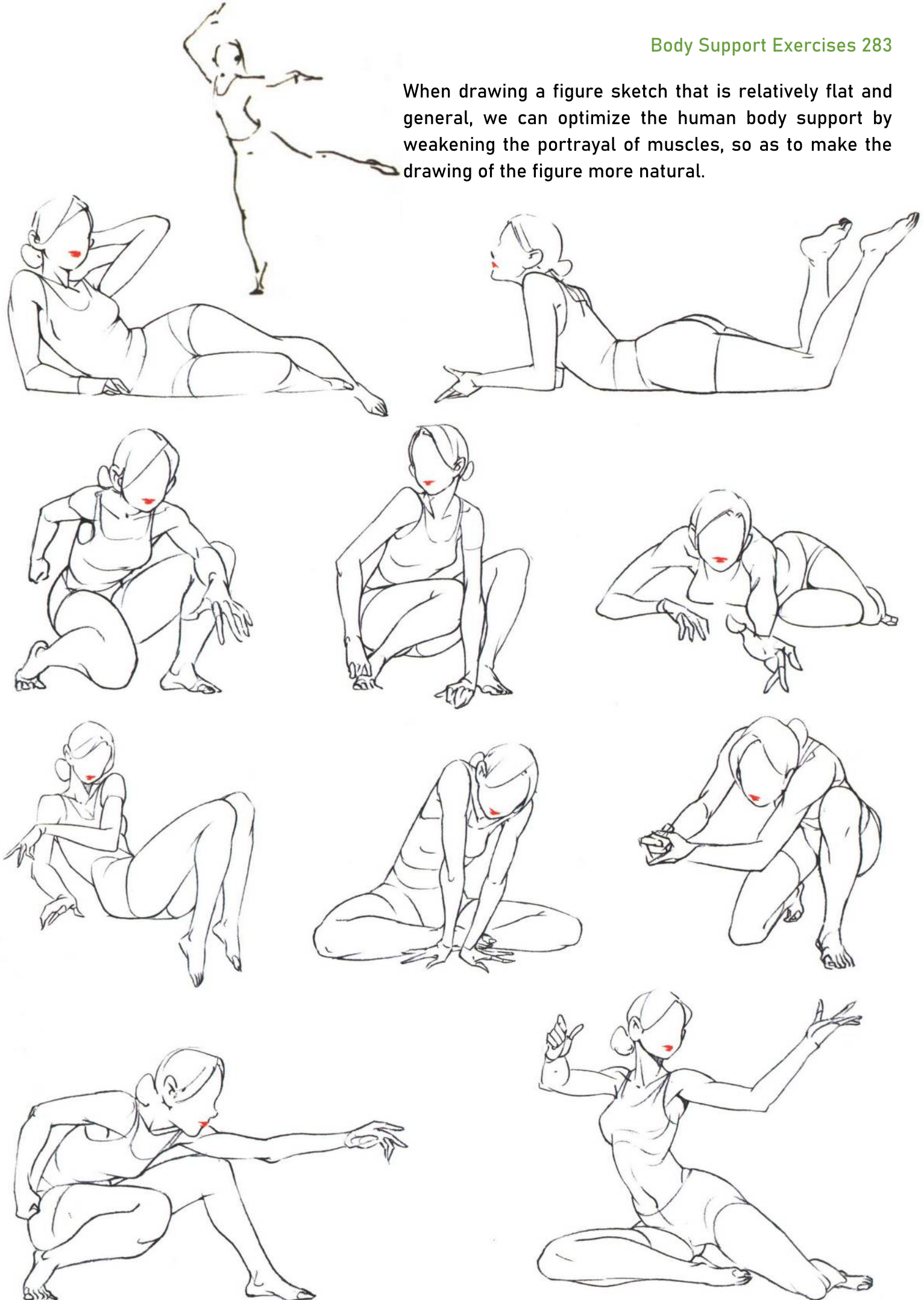


10 Optimizing the human body support

When drawing sketches, we can optimize the human body support, and adjust the shape of the joints of the human body subjectively, so as to make the figure more reasonable.

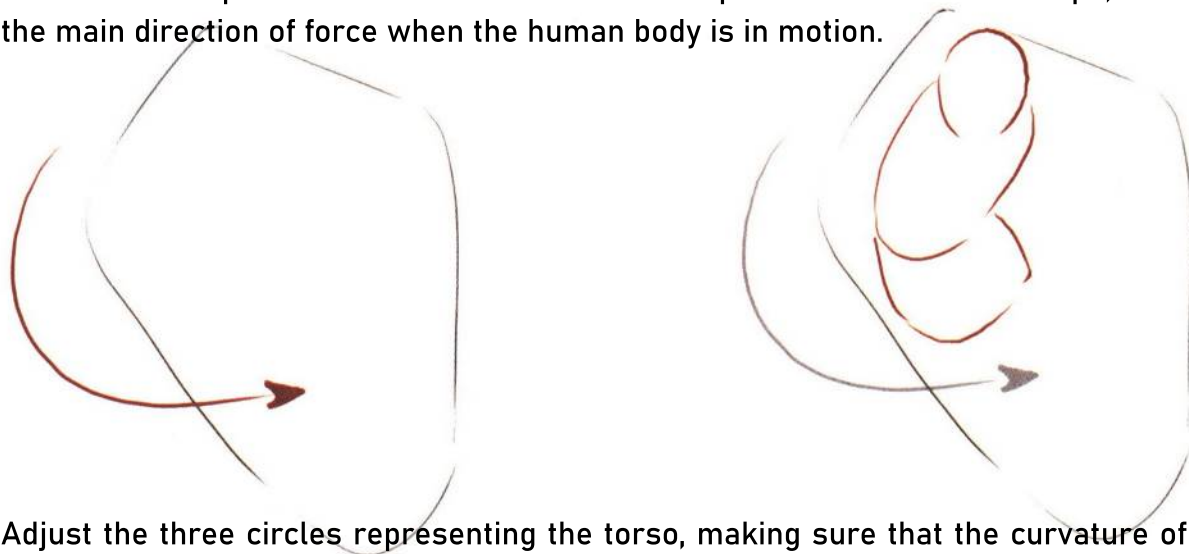


When drawing a figure sketch that is relatively flat and general, we can optimize the human body support by weakening the portrayal of muscles, so as to make the drawing of the figure more natural.



11 Exercises for drawing the human body with a sense of power

Draw a flat shape and mark an arrow around the perimeter of the flat shape, this arrow represents the main direction of force when the human body is in motion.

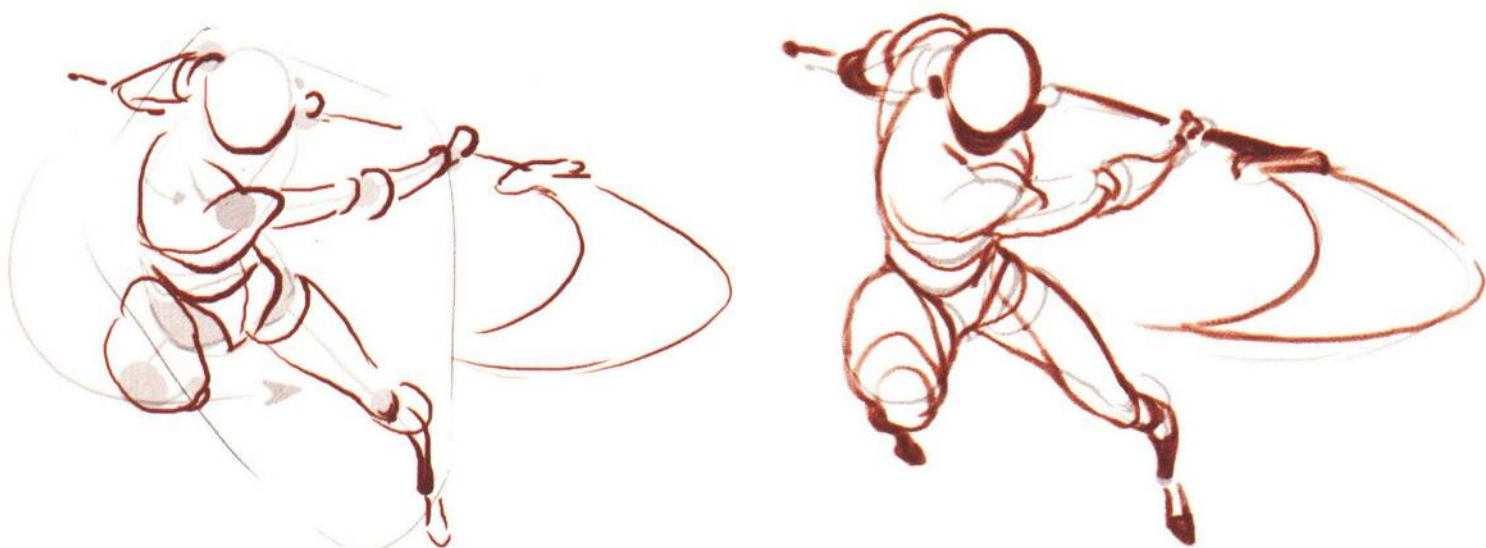


Adjust the three circles representing the torso, making sure that the curvature of the three circles harmonizes with the direction of force. Based on the three circles, label the spheres of the shoulders and use the lines to show the three-dimensional shape of the head, chest and hips.

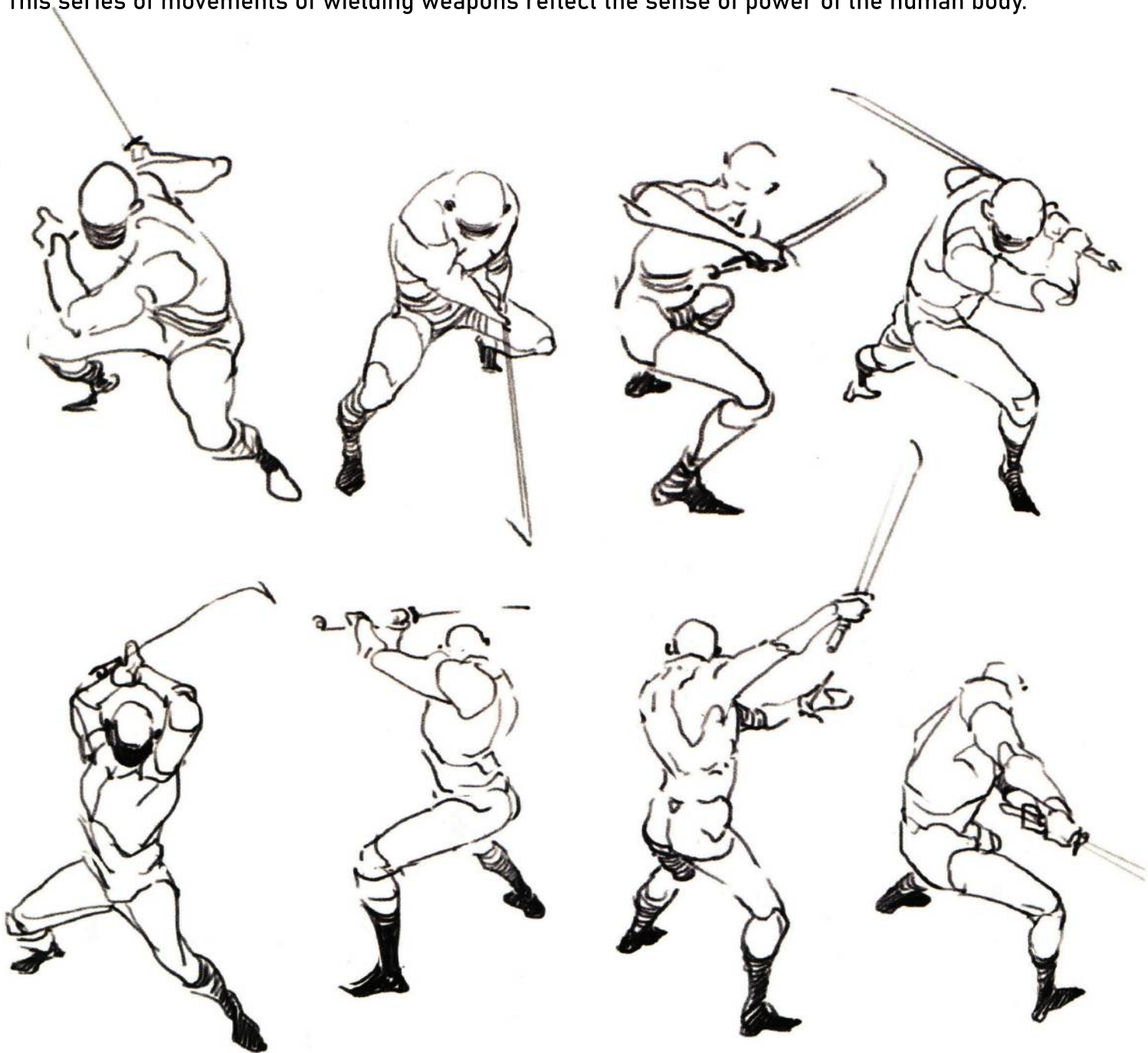


Draw the limbs and their points of articulation on the basis of the support, and mark the direction of the arcs of each point of articulation. Draw the general outline of the human body with lines, and add objects other than the human body to strengthen the direction of strength.

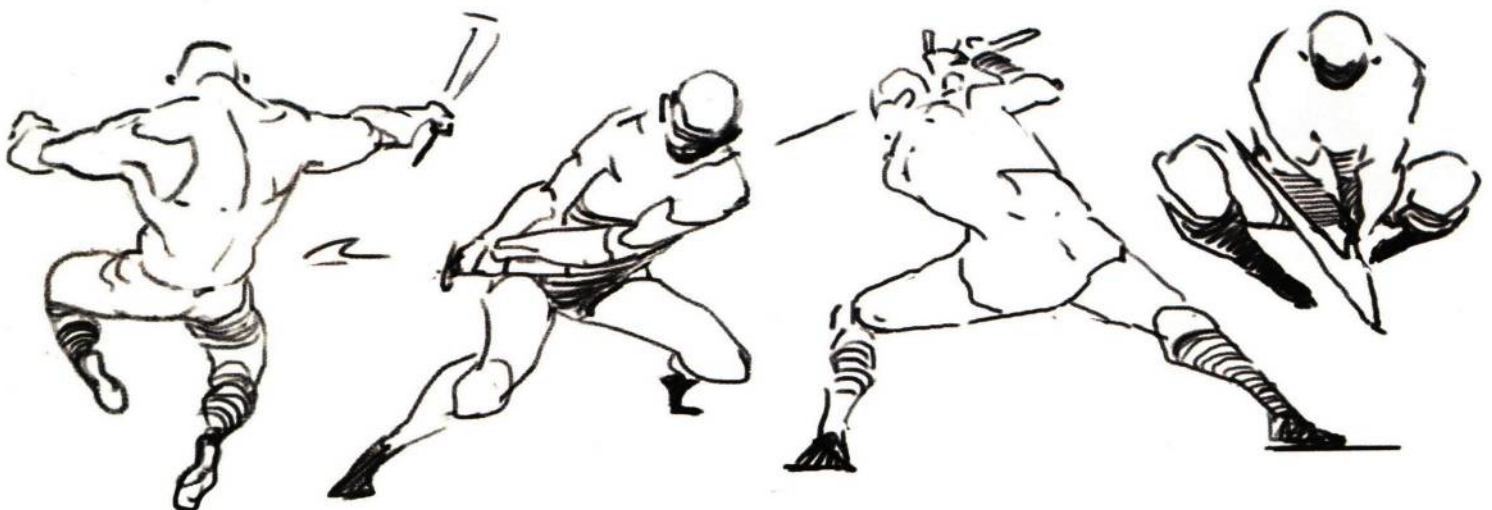
Add further details to refine the overall line.



This series of movements of wielding weapons reflect the sense of power of the human body.



We can try to refer to the above actions or to some specific actions as the theme of a group of human body sketch with a sense of power.

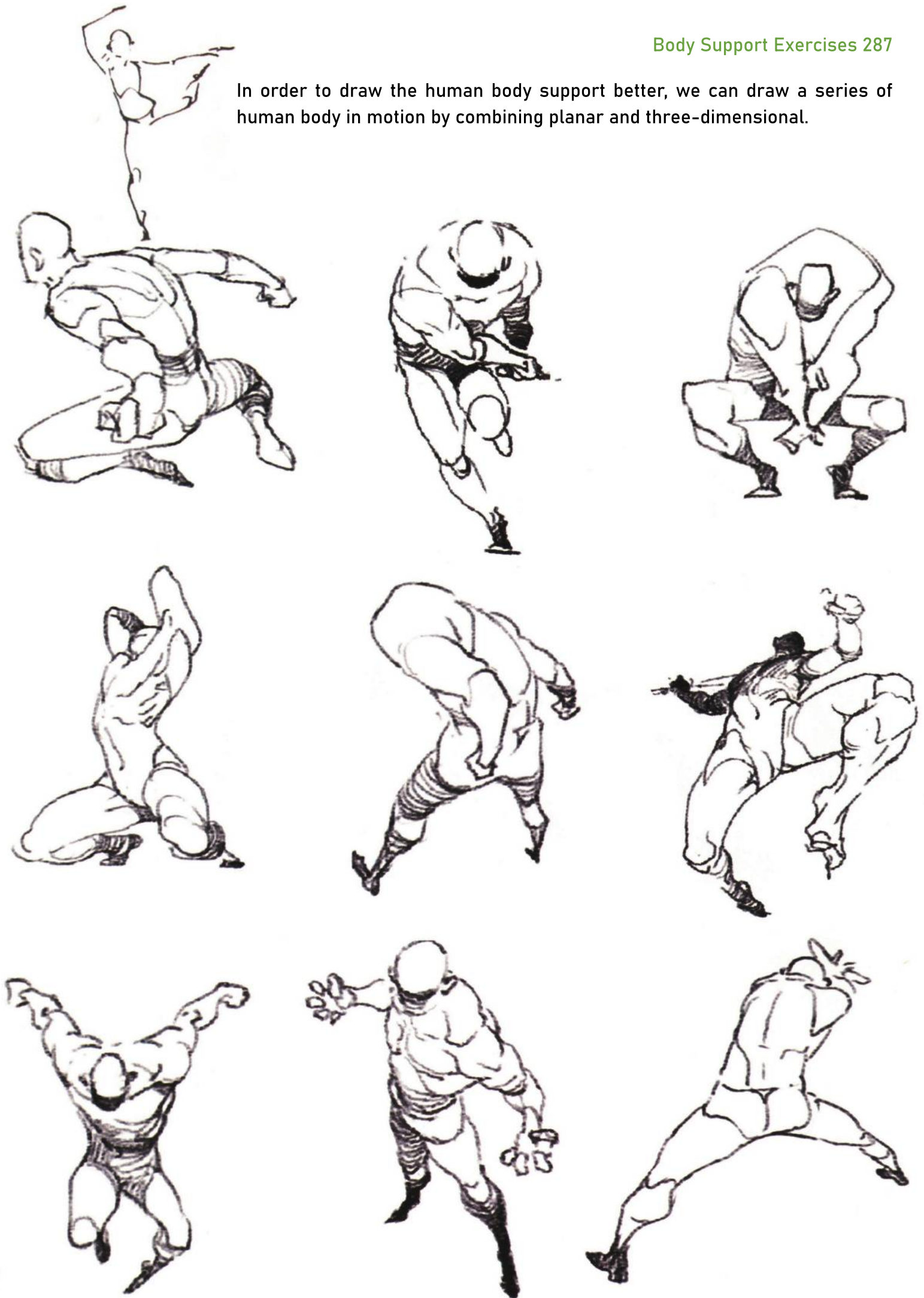


12 Comprehensive drawing exercise of human body support

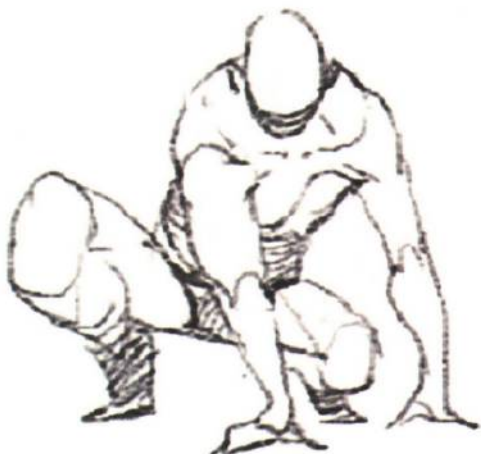
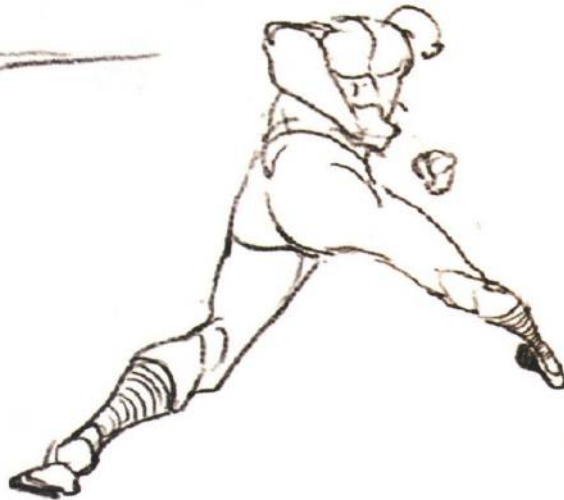
If you want to be more skillful in drawing different human body movements, you can try to draw a set of staggered lines at random, and then use each line as the spine of the human body, and then add the torso and limbs to draw different human bodies. Different states of the spine, torso, and limbs can be used to represent different human dynamics in the same drawing.



In order to draw the human body support better, we can draw a series of human body in motion by combining planar and three-dimensional.





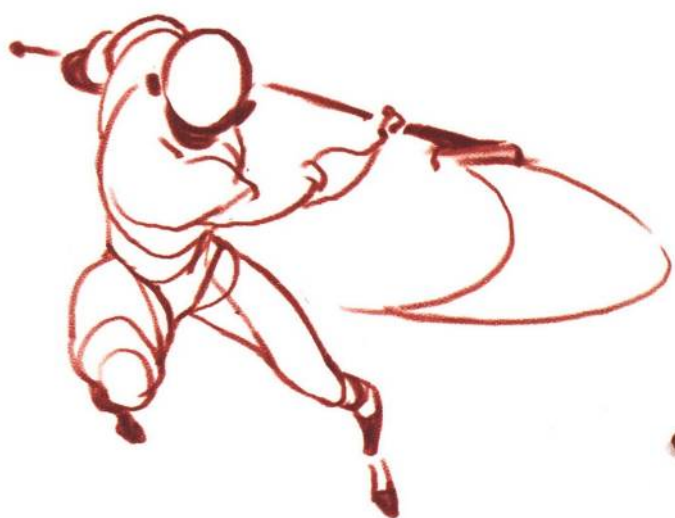


13 Ink and wash human body dynamic drawing exercises

In order to express the tension in the picture, we can further model the powerful human body that we drew earlier.

Use a thin line to draw lines of speed on the object, and draw the folds of the clothes on the figure.

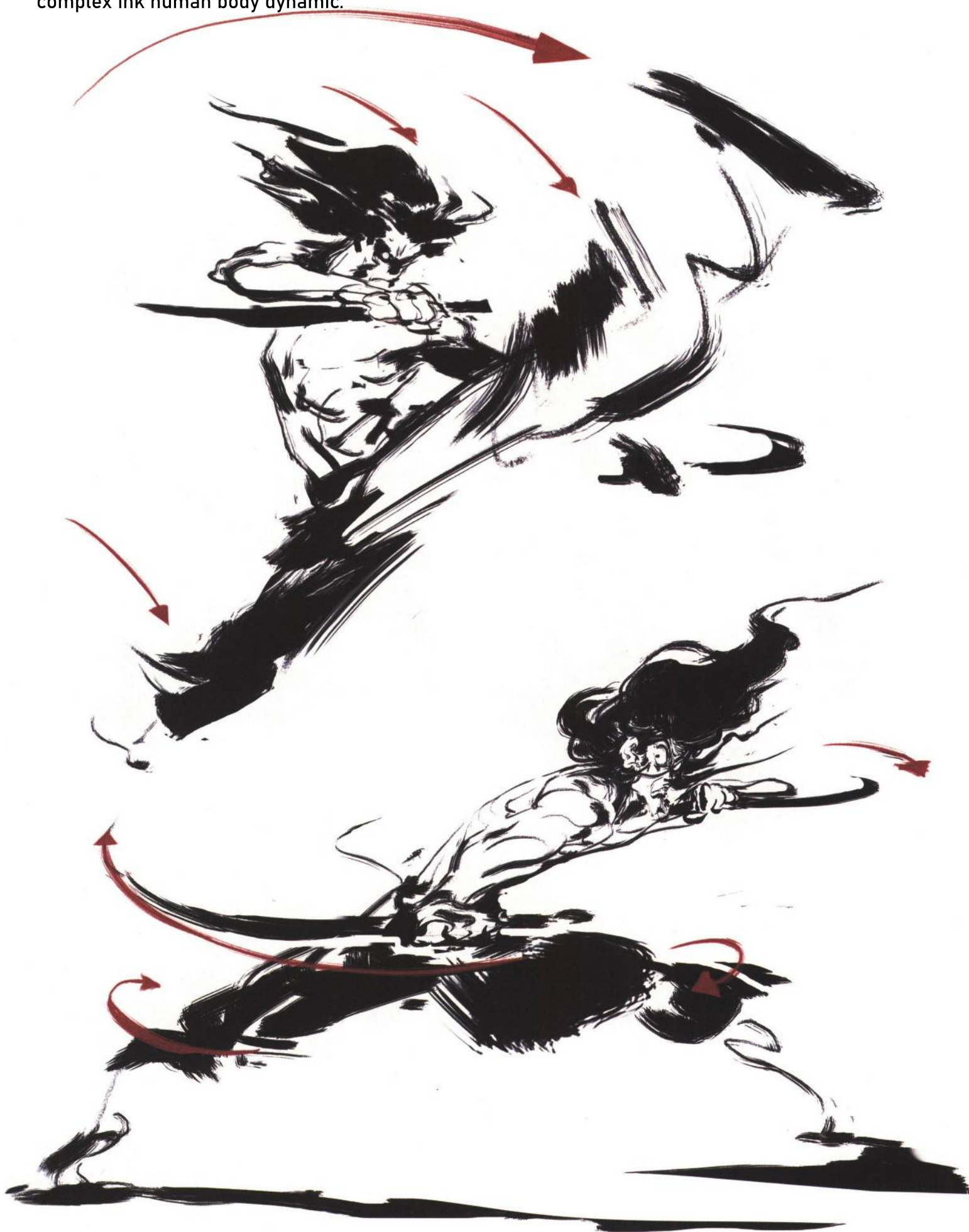
By focusing on the direction of the force with more textured brushes, we can create a more expressive ink human body dynamic.



When practicing drawing the human body in ink and wash, we can try to draw the specific shape of the joints of the human body.



Mastered the drawing of ink human body dynamic knowledge, we can try to draw some more complex ink human body dynamic.



The state of movement of the figure and the fluttering clothing are both key elements in portraying the dynamics of the human body.





Chapter Seven



Artwork Appreciation

第七章

作品欣赏

01 黑无常

02 持刀鬼

03 燃灯鬼

04 大力鬼王和恶鬼

05 山魈和野猪

06 更多妖魔鬼怪

07 角色展示

01 Heibai Wuchang (Black Impermanence)









02 Sword-wielding Devil





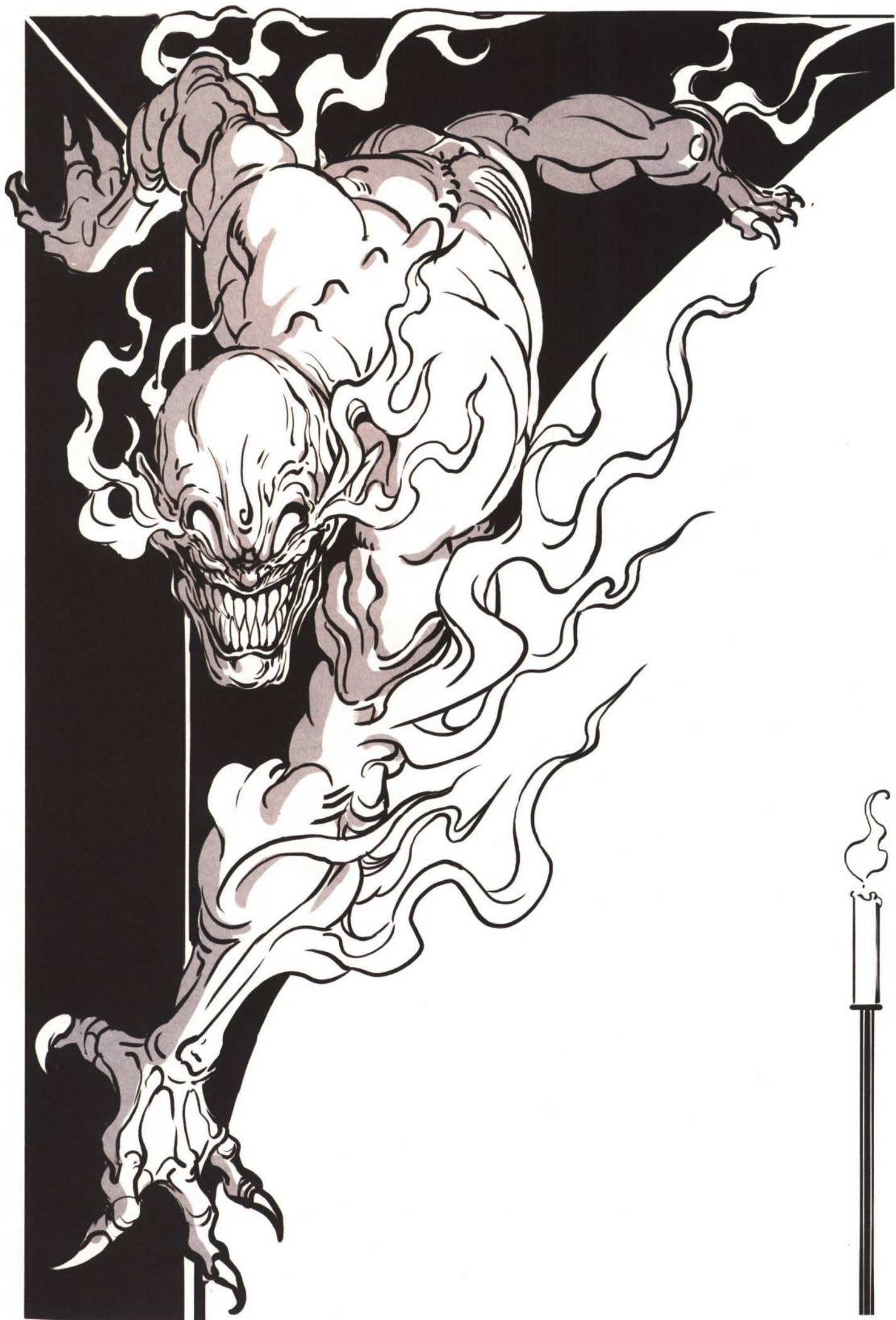


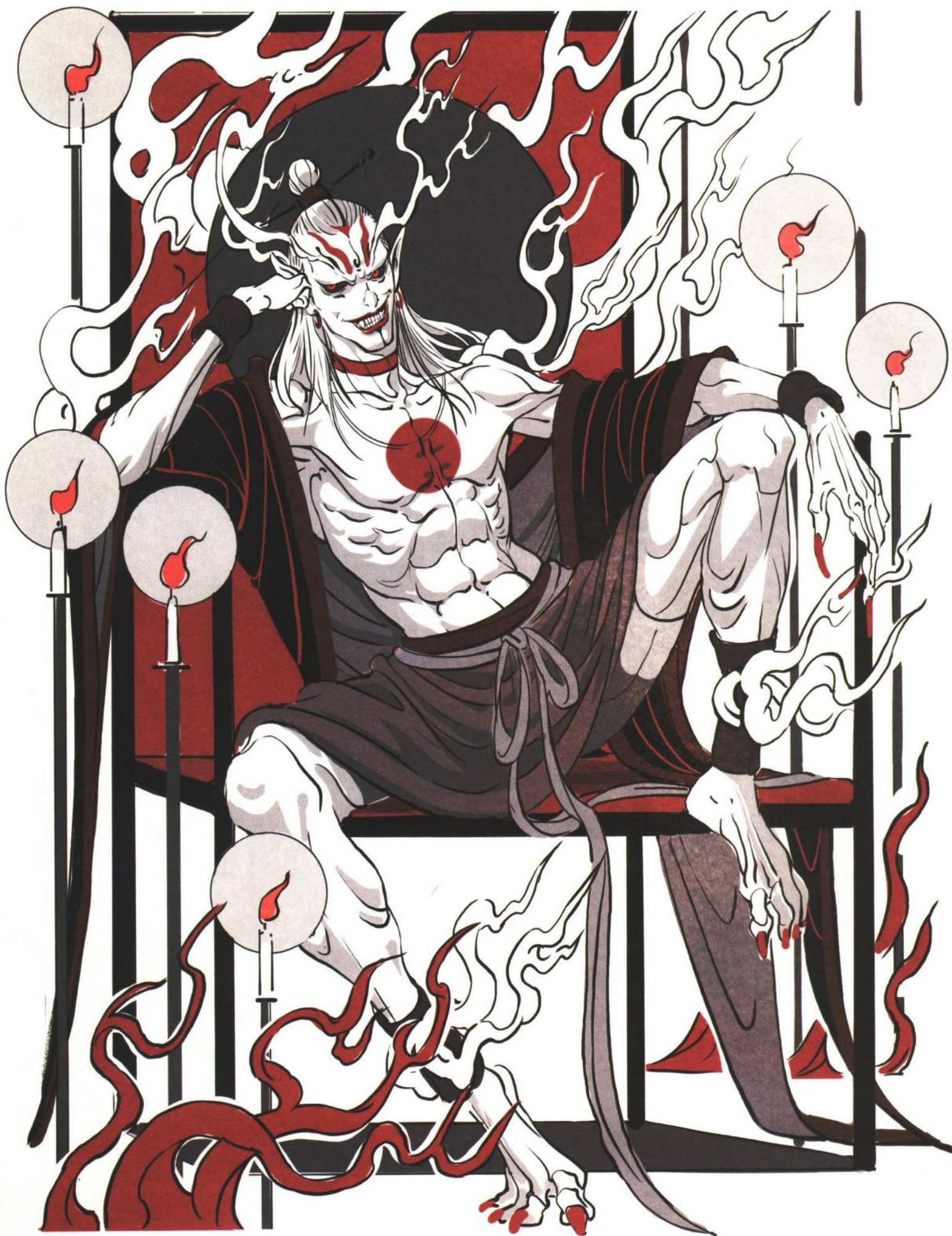


03 Ghost Jack-o'-lantern











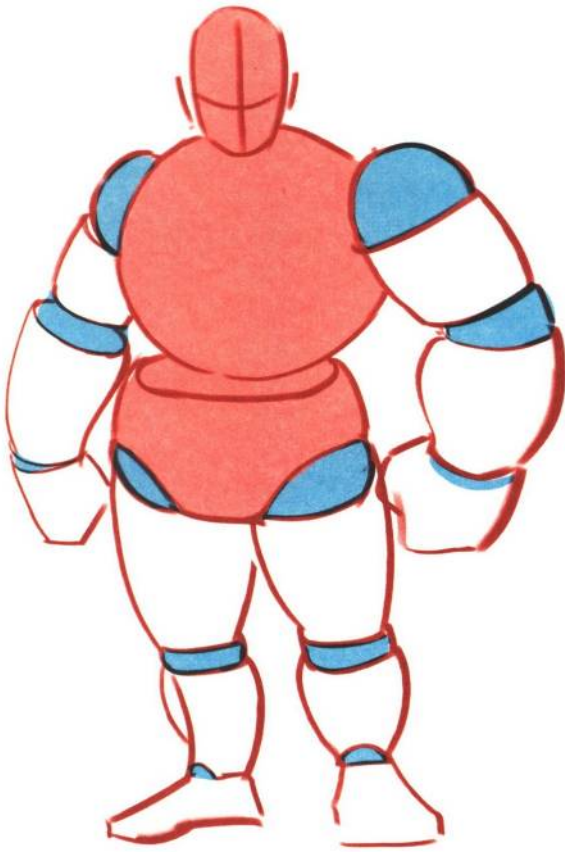


04The King of Powerful Evil Ghosts

This section part was inspired by the Vajra Elephant we see here. The strong and sturdy Ghost King



When making character adjustments, you can start with the proportions of the character's head, chest, hips, and limbs, and enlarge these parts to make the character look strong. This is the key to character adjustment.

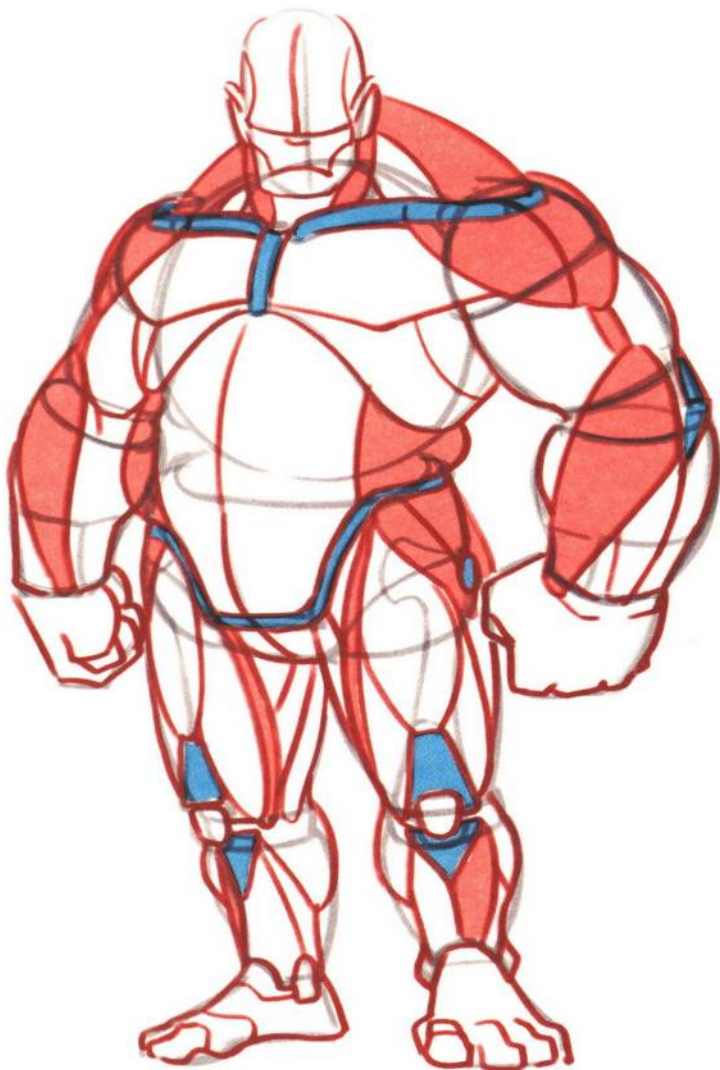


On top of the original proportions, mark the locations where the human skeleton is more visible. These are the collarbone, hip bone, elbow joint, knee joint, etc. Focus on the key points of the character's movement to enhance the dynamism.



Once the character's proportions and bones have been labeled, the muscles can be added on top of them. When adding muscles, it is not necessary to draw all the muscles, but to mark the shape of the muscles on the moving joints.

These three steps are the basis for building a character, and only after analyzing these basic relationships will the subsequent drawing become easier.



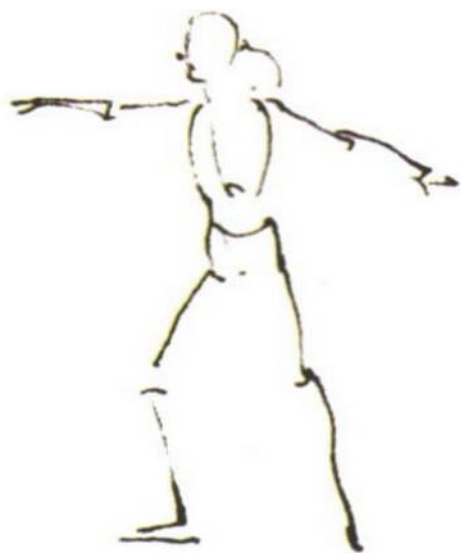


With the structure of the human body in place, it's time to add the details of the character. We can analyze the way the character is dressed by taking a look at the previous characters.



In this step, don't rush into the details right away. First, arrange the character's clothing area, and adjust the shape of these areas to better control the overall relationship of the character.

Once you have an intuitive whole, you can build on it to create the details of the character. Of course, this process requires some practice and accumulation to find your own favorite way of drawing, so that you can draw more interesting characters.





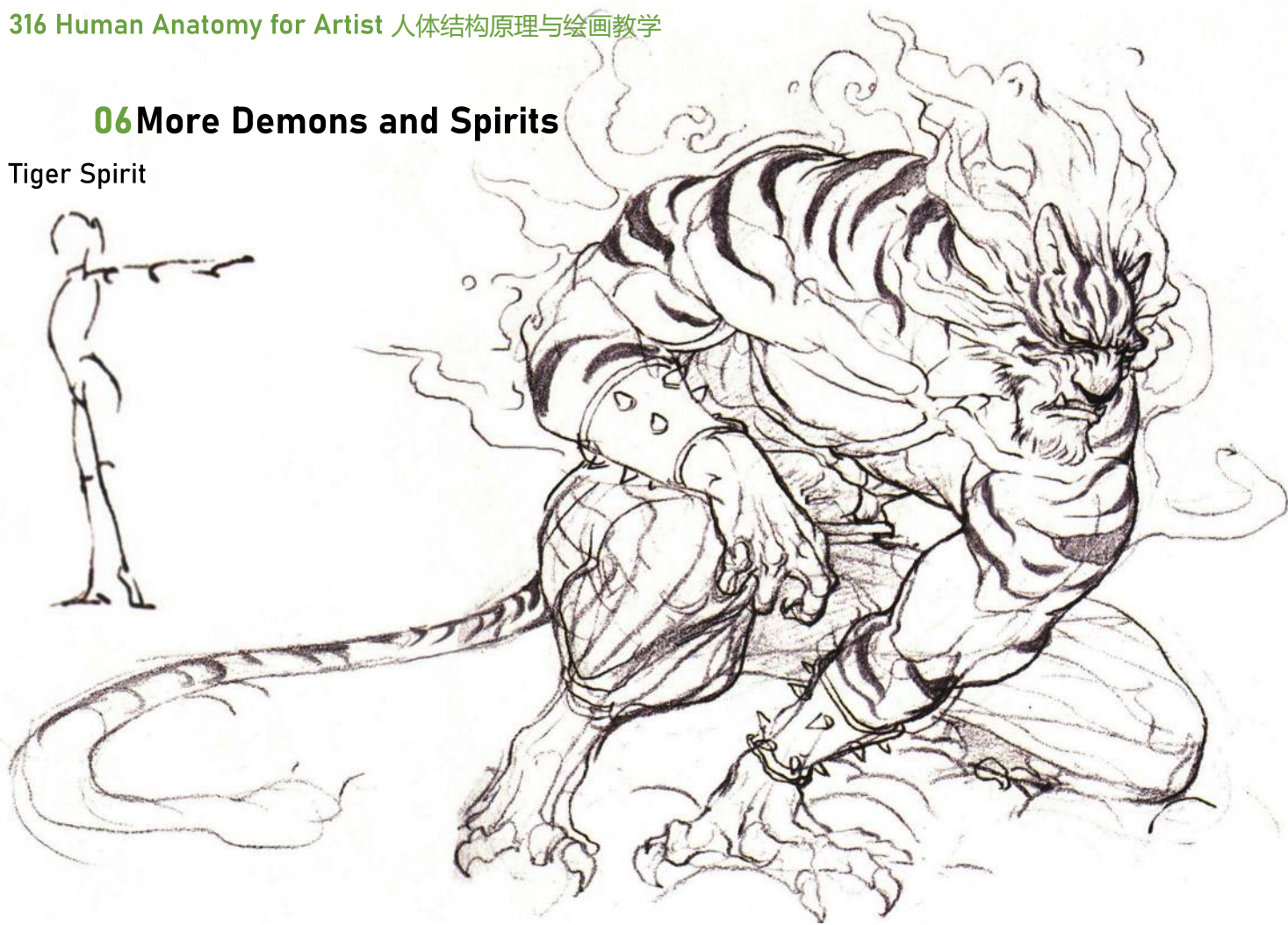


05 Demon and Wild Hog

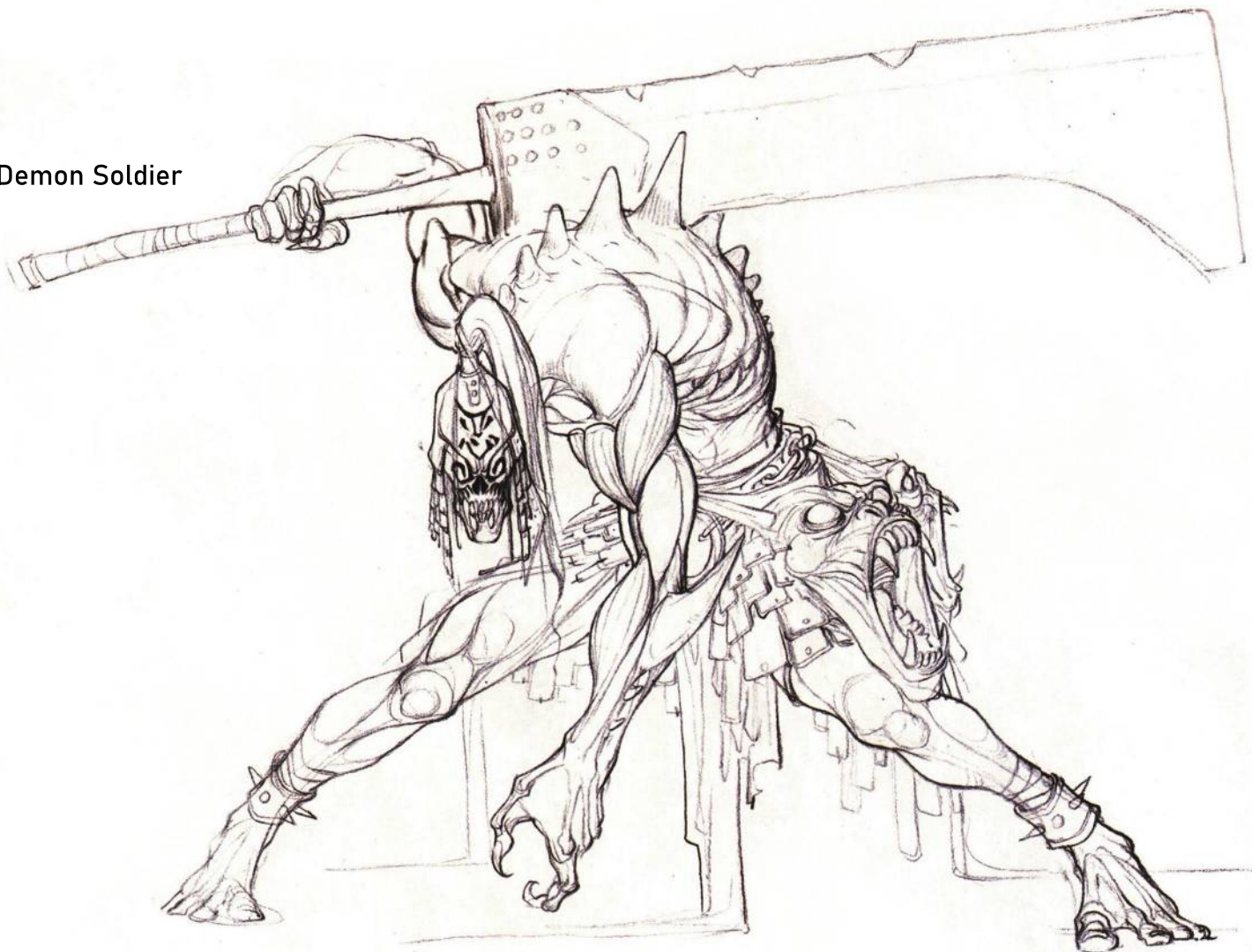


06 More Demons and Spirits

Tiger Spirit



Demon Soldier



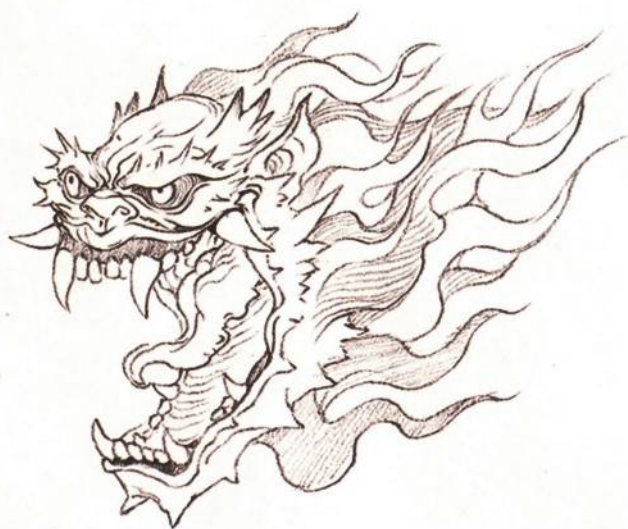
Little Ghost Busters



The Little Ghost of the Hill Patrol



The Cleaner Ghost







07 Character Showcase



King Kong Rex

Phantom General



Nine Tails Cat Demon



Vampire



Beast-man



Afterword

The creation of this book has taken me nearly five years under the effect of my serious procrastination. During this period, I went through a lot of experiences, going from Guangzhou to Shanghai, Beijing, and finally back to Guangzhou again.

The process was long and difficult, from the pressure of the book manuscript, from the confusion of the bottleneck period of drawing, and also from the pressure of work and family. There were times when I didn't want to continue to work, but I always picked up the pencil and continued. There are still a lot of things that I haven't figured out yet, and I know that I'm still far away. Fortunately, I've met a lot of great seniors and interesting people along the way, each of whom has their own drawing qualities, and it's been a great pleasure to talk with them. I would like to thank Gui, a well-known book author and translator, for his help with this book. Thank you to the professional editorial team of the People's Posts and Telecommunications Publishing House for their support and help.

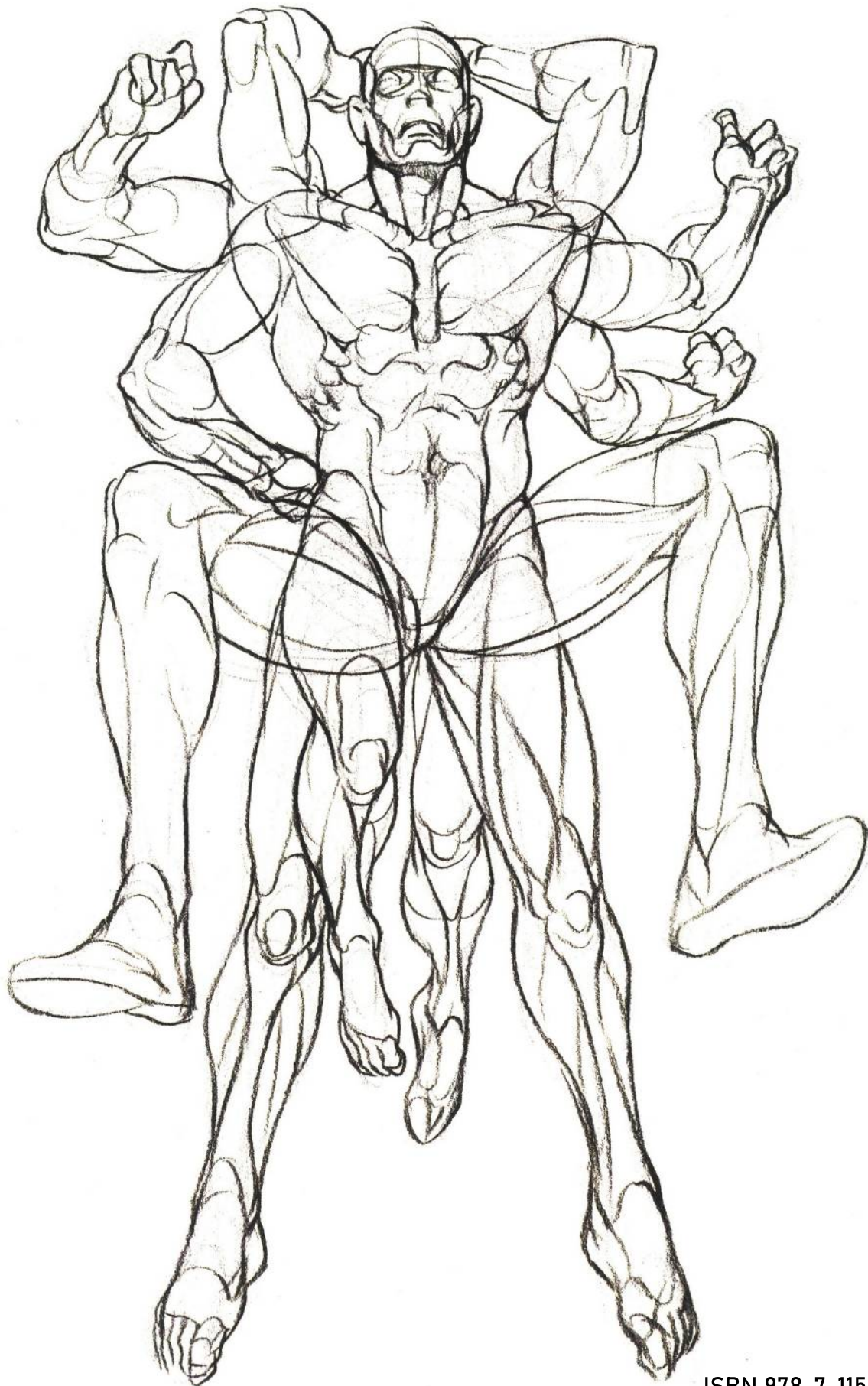


I would like to thank the teaching team of Chun's studio for their support and companionship, which helped me share many of my work responsibilities and allowed me to focus more on my creation. Thank you to my parents, thank you to my father and mother for their silent care and support. Thank you to all the teaching assistants and students in the online and offline painting classes I have taught over the years. The days of painting and learning together are happy and short, and I am very lucky to have met you, wishing you all success in your studies, success in your work, and happiness. Finally, I still hope that you can gain something from reading this book, and it would be a great honor if you can make some progress.

Perseverance is the dim light on the lighthouse,
guiding you and me in the direction of progress.

Just Draw.





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